

# Backwoods



# Home magazine

*practical ideas for self-reliant living*

July/Aug 2000

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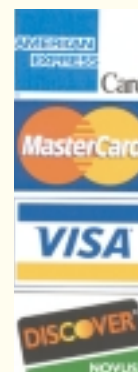
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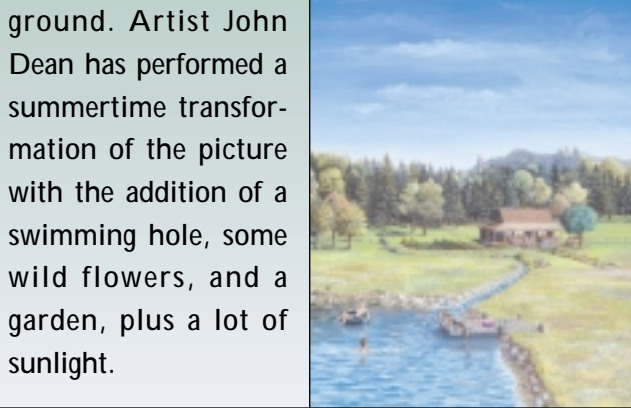
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ABOUT THE COVER

The inspiration for the cover art comes from Ilene Duffy and a wintertime picture of a country house Dave Duffy built some years back.

The scene shows the snow-covered house nestled in a forest backdrop with a creek and a meadow in the foreground.



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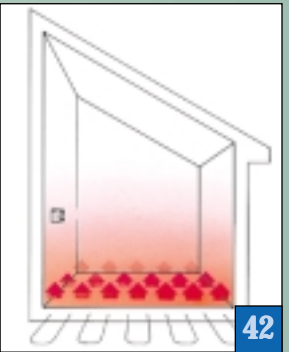
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Ever wonder how to make your own tasty jerky? Here are three easy recipes along with complete directions so you can make it in your own dehydrator or even in your kitchen oven. Try these and you'll never look at store-bought jerky the same way again.





# Publisher's Note

## It's here—the CD-ROM

Done at last, done at last, thank God Almighty it is done at last! I'm talking, of course, about our first CD-ROM, which we have been working on for nearly a year. It contains our last four years worth of issues, namely the 24 issues of 1996 through 1999. It is layed out like one of our book anthologies, that is, stripped of advertising. As we can, we'll also produce the four print anthologies for these issues.

This CD-ROM is very good. Many of the photos are in color, and it is searchable so it will be easy to find the information you want. The price is \$39.95, which is a steal for the vast amount of information in it.

We chose to put our last four years on this first CD-ROM because three of the years are not available in any of our book anthologies (1996 is). Also, it will take a lot more work to put years 1989 through 1995 into a CD-ROM because many of those articles are in corrupted or missing computer files, so they must be retyped or scanned. Nevertheless, we hope to have that CD-ROM ready before the end of the year 2000.

The CD-ROM is in PDF format, and it includes a free copy of Adobe Acrobat Reader, which you will automatically load onto your computer the first time you put the CD-ROM into your CD-ROM drive. It's foolproof and easy to use. It'll be just like having the whole stack of magazines from the last four years next to you, only you'll be able to quickly retrieve information on the subject you want.

## 38 "HALF PRICE" books are part of this issue's *End of the World Special*

My prediction for last issue's *End of the World Special* (page 99 of each issue) was correct. The doomsayers predicted widespread earthly cataclysms due to several of our solar system's planets lining up. The planets lined up, just as they do every now and then, but there were no cataclysms, just as I predicted. But there was a lot of money saved by our readers, as many of you took advantage of our half price sale on the book, *Making the Best of Basics*.

This issue's *End of the World Special* centers around Global Warming, which is another phony, but widespread, doomsayer prediction. Since so many people believe Global Warming is a problem, we've decided to put a lot of books at half price—38 in all, which makes it our biggest sale ever. The ad on page 99 explains the phony Global Warming crisis, and the HALF PRICE books are listed on page 74 (A picture of the books on sale are on pages 92-95.).

I have an ulterior motive for discounting so many books so heavily. We are overstocked with them and I want to sell



Publisher Dave Duffy

them before I bring in new books. The sale on these books is good **"until they are sold out."** No rain checks. When gone, we'll replace them with different titles since we have been carrying many of these books for more than a year.

## News from the newsstands

The battle of the newsstands continues. A couple of issues ago we were tossed off the newsstands in several states, as large distributors battled with little guys like us to increase their profits. One of the states we were thrown out of was Colorado, but beginning with this issue we are back in Colorado, as another local distributor there has picked us up.

We get a lot of inquiries from people as to why we are not on their local newsstand. It is beyond our control and beyond the control of your local book seller. It is in the control of very powerful companies manipulating newsstand distribution to increase their profit. It does not affect us financially, since many of the newsstands we have been forced off had a "sell through" rate of only about 3 magazines for every 10 we put out. In fact, getting rid of such inefficiency helps us financially. However, it makes it very inconvenient for newsstand readers who can no longer find a copy of the magazine.

The only solutions I can think of until these newsstand wars are over is to either read the magazine online at [www.backwoodshome.com](http://www.backwoodshome.com), get yourself a subscription, or buy each issue individually by sending us \$5 (only a nickel more than the newsstand price) and we'll mail it directly to you in an envelope. Δ

# My view

## Why not risk it all!

I got this letter from a reader:

*Please cancel my subscription. I had the opportunity to read your editorial glorifying your agenda as a "paranoid, gun-toting nut." This is not an agenda I support. It's a shame that Backwoods Home seems to have evolved into a single-issue political rag. I'm sure you will find many readers who support your political position. I'm just not one of them. — R. Smith*

I respect R. Smith's decision to cancel his subscription, just as I respect anyone's decision to *act* on their principles. But I think R. Smith's reasoning is in error.

First, this magazine only devotes one page per each 100-page issue to my "gun-toting nut" philosophy. The rest is devoted to self-reliance topics. That hardly makes us a "single-issue political rag." Nearly every other country magazine in America devotes more than one page to environmental activism, but I'm sure R. Smith or anyone else wouldn't consider them nutty environmental rags.

Second, my stand on guns is really not nutty, but a reasoned argument in favor of the *2nd Amendment* to the *U.S. Constitution*, the mention of which sends many people scurrying for cover because they have been convinced by the mass media that it is an embarrassing subject because guns only kill people and do nothing for the freedoms Americans enjoy. As pointed out in previous editorials, John Lott's monumental statistical study, *More Guns, Less Crime*, gives ample evidence that the former is false, that in fact guns save far more lives than they take. And the entire historical record underlying the *U.S. Constitution* gives ample evidence that the latter is false, that in fact guns have everything to do with our freedoms.

The *2nd Amendment*, namely the inherent right to privately own guns, is the ultimate safeguard of Americans' freedoms. In the bitter end, it is our only safeguard, and the thinking of the Founding Fathers and our best political leaders up until the last 30 or so years supports this reasoned view. Guns were put in private hands to keep the Government at bay. It really is that simple. The *2nd Amendment* was put into the *U.S. Constitution* for the sole purpose of ensuring those governed would have the means to *overthrow* their own Government if that Government turned against the people.

In these modern times, however, many Americans have no historical memory, mainly because the *U.S. Constitution* is seldom mentioned in the school classroom and never talked about by the mass media. What films are produced about America's founding focus on battles and personalities, but ideas are virtually never discussed. Even the recent and very popular made-for-TV movie, *The Crossing*,

focused mainly on George Washington as a man of great leadership and determination, not a man who was a highly respected thinker of his day who fully understood he and his ragtag army were fighting for freedom from the tyrannies of all past Governments. Washington and the Founders risked their lives and fortunes for principles that were new to the world, and many did, in fact, pay with the loss of their lives and fortunes.

But if you took a random poll among Americans today, I doubt one in ten could recite as many as five *Articles* or *Amendments* to the *U.S. Constitution*, although they could probably tell you all about 20 or so of their favorite mind-numbing TV programs. If you really pressed them on what they think our rights are, many would probably say something like they think we have the right to a good job, a good standard of living, free education, free medical care, a clean environment, protection from criminals, and social security.

Politicians who support those "manufactured rights" tend to get elected to public office, and newspapers and magazines who support them tend to sell a lot of issues. We who defend our real "rights," which can be summed up as the right to pursue a better life free from Government intrusion, and the right to resist Government intrusion with force if necessary, are looked upon as crackpots by most of the population.

I have been told by a number of so-called experts in the publishing field that if I were to abandon all mention of guns and politics and instead devote at least 10% of this magazine to environmental activism, I could greatly increase my circulation and profits. Even John Shuttlesworth, founder of *The Mother Earth News*, became a millionaire by, in part, devoting part of his magazine to environmental activism. Of course that was in a day when a little environmental concern was needed, so I don't fault John much for that. But today's environmental activism is 20% concern for the environment and 80% concerned with building ever bigger Government control over our lives.

Should I abandon my support of guns and the *U.S. Constitution* so I can make a lot of money? Or should I continue to take the risk of losing more subscribers because I stand up for what I know to be right? Our Founding Fathers risked it all for our freedoms. They did it for themselves and for us. I intend to continue risking it all for myself and for those generations to come. Life is too short to live for what is popular and profitable. It must be lived for what is right.

Here's a quote by Samuel Adams that another reader enclosed in a letter to me. I think it sums up my view:

*If ye love wealth greater than liberty, the tranquility of servitude greater than the animating contest for freedom, go home from us in peace. We seek not your counsel, nor your arms. Crouch down and lick the hand that feeds you. May your chains set lightly upon you, and may posterity forget that ye were our countrymen.*

— Dave Duffy Δ



# HOME DAIRYING

By Marcella Shaffer

**T**here is a big difference between home dairying to produce food for your family and dairying to sell milk or milk byproducts to others. Since milk and dairy products are some of the most closely monitored farm products, laws and legal requirements pertaining to their sale and processing are staggering. For this reason, this article addresses milk and milk byproducts for personal consumption only.

In terms of productivity, few animals can compare with the homestead dairy animal. From this humble creature comes pure milk, providing valuable nutrition for you and your family. Milk is also the foundation of many other delicious foods like cheese, butter, yogurt, pudding, sauces, custards, ice cream, milk soups, and gravies, as well as nonedibles like livestock feed, homemade paint, and soaps.

Cattle and goats are the two most commonly utilized dairy animals in the United States. Each species requires housing, fencing, and feeding, as well as a firm commitment to regular, twice daily milking. This is a very important consideration to remember when acquiring a dairy animal. Regardless of which you may choose to own, the milk and milk byproducts from each are handled basically the same way.

## Basic equipment

Stainless steel is the material of choice for milking buckets and for other containers used in milk process-

ing. It is also the most expensive and beyond the budget for many. Fortunately food grade plastic containers and glass will work fine, but they should be seamless since bacteria and germs can collect in seams. Clean utensils are a major factor in milk flavor and one of the biggest causes of "off-flavor" milk. Always pre-rinse buckets, containers, and other utensils in lukewarm water as soon as possible after using. This pre-rinsing will help prevent milkstone deposits from forming, which can be very diffi-

with several layers of a clean fabric like a dishcloth, muslin, or diaper. Always rinse and boil the cloth afterwards. Glass jars, like regular canning jars or gallon jars can be used for storing milk. Because of the difficulty in cleaning, plastic commercial milk jugs should not be used. You will also need buckets or other containers for wash-

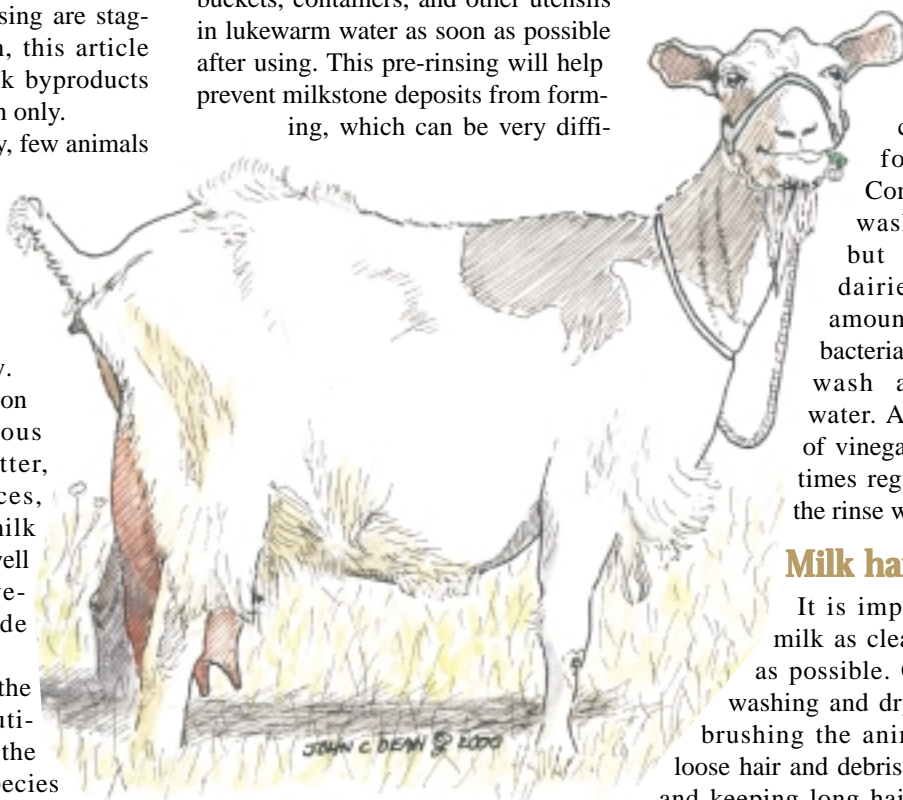
ing and rinsing the animal's udder, as well as a cloth and towel for drying.

Commercial udder wash is available, but most home dairies use a small amount of mild antibacterial soap like baby wash added to the water. A small amount of vinegar is also sometimes regularly added to the rinse water.

## Milk handling

It is important to keep milk as clean and sanitary as possible. Clean utensils, washing and drying the udder, brushing the animal to remove loose hair and debris, fresh bedding, and keeping long hair clipped from the udder will all help to keep your milk clean and reduce the bacteria count. Always strain milk immediately after milking.

Pasteurization is a bacteria-killing process that kills germs. Some scoff at the notion of pasteurization, maintaining that if you have healthy animals it is not necessary. Others are adamant about it, insisting that all milk is potentially dangerous unless pasteurized. Convenient electric pasteurizers are available that you simply plug in



cult to remove. Next wash and scrub thoroughly in warm soapy water, then rinse. Follow with another rinse in scalding water and air dry upside down.

Any milk intended for human consumption should be strained. Milk strainers can be purchased which use disposable paper filters. One of the smaller models can be purchased with 300 filters for less than \$15. You can use a regular kitchen strainer lined

or you can use a double boiler set-up and pasteurize on your stovetop. Use a thermometer and heat the milk to 161 degrees Fahrenheit. Stir milk to be sure it is 161 degrees throughout, then hold at this temperature for 20 seconds. Remove the milk from the heat and cool quickly by placing in ice water.

If you choose not to pasteurize, immediately chill milk by placing the strained milk in a container of ice water. Ideally you should chill the milk to a temperature of 40 degrees Fahrenheit within one hour. Store milk, both pasteurized and unpasteurized, in the coldest part of the refrigerator.

Milk can be canned or frozen for those times when your dairy animals are not producing milk.

To can milk, fill jars to ½ inch from the top and process for 10 minutes at 10 pounds pressure or process in a boiling water bath for 60 minutes. Processed milk will not taste like fresh milk but it is suitable for cooking. To freeze milk, use jars, plastic containers, or freezer bags. Allow for expansion (like freezing any liquid) and let thaw completely before drinking for better taste.

## Butter and cream

Butter is made from the cream part of the milk. Cream is the globules of fat that are suspended throughout milk. Cream is harder to remove from goat's milk than from cow's milk because of the difference in the milk's structure, not the cream content. There are two basic ways to remove the cream from either animal's milk: by skimming or by separating.

Cream can generally be removed from cow's milk by skimming. Simply let the milk set undisturbed for 24 hours, then skim off the cream, which will have risen to the top. When you remove cream in this manner, you do

not get it all because some will stay mixed with the milk, but this cream is denser than that which stays mixed

***Cheese making is an art in itself, but many of the simpler varieties can easily be made at home.***

and great for making butter or whipped cream. If goat's milk is left to set for 24 hours, some cream will rise to the top, but not nearly as large of an amount.

Using a cream separator is the most thorough way of removing the cream from milk. If you use a separator for goat's milk, be sure it is one that can be adjusted for goat's milk or one that

which are gear-driven paddles inside a jar. The famous Daisy churn from years gone by is an example of a gear-driven churn. Electric and nonelectric versions of the Daisy can be found, while some people routinely use their kitchen mixers or blenders at low speeds. If you do not have a butter churn, a quart jar and lid will work nicely. Let 24-hour old cream reach 60 degrees in temperature, then fill the churn (or jar) not over half full. Rhythmically and steadily slosh the cream back and forth. Butter will usually begin appearing after 20-30 minutes of churning, resembling small clumps in the milk.

After churning, the butter must be "worked" to remove the milk from it.

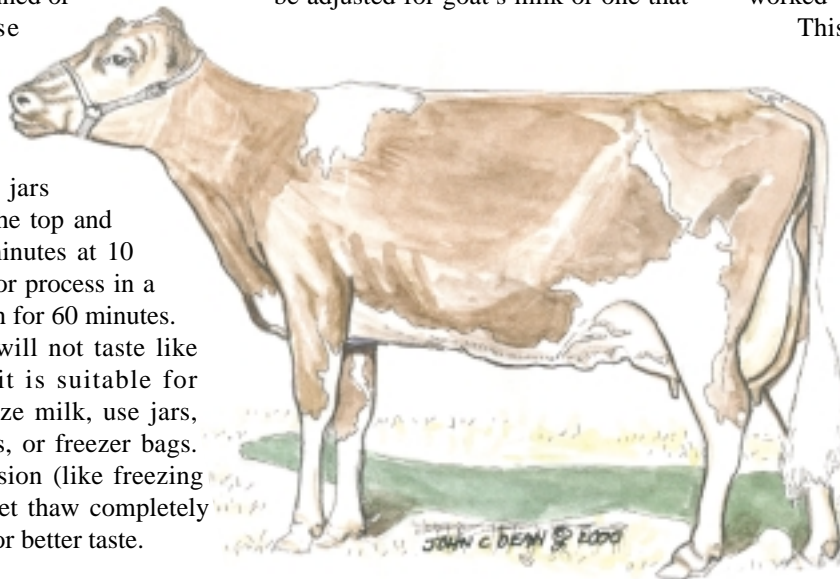
This is critical in making good butter that will remain tasty. Remove butter from the milk and place in a bowl of cold water. Gather the butter into a ball, then flatten into a layer. Repeat as if kneading bread and change the water frequently. As the milk is rinsed away the butter will begin to feel waxy. Continue working until the water remains clear. Remove from the water and knead with a spatula to remove as much water as possible. Salt can also be

added at this time and worked into the butter if you wish. Pat dry and shape into a patty (or use a mold). Cover and refrigerate or wrap and freeze for later use.

Cream can be frozen after separating and utilized later as butter or whipped cream. Let thaw completely before using.

## Yogurt

If you have never tasted homemade yogurt, you are in for a real treat. Yogurt made from whole milk is far superior in taste to the commercial variety. If you are using cow's milk for yogurt you should skim it first.



is designed specifically for goat's milk. Separators work on the principle of centrifugal force and are available in both freestanding and tabletop models. If buying a used one, be sure all the parts are there. Separators have as many as 18 disks, (depending upon the model) that the milk is forced through. Many separators commonly seen at auctions and antique shops do not have all the disks.

Churning the separated cream makes butter. Churns are traditionally dasher churns which are some sort of crock with a wooden dasher, drum churns which are a revolving drum with paddles inside, and hand-cranked churns,



Goat's milk will be fine as is. Adding "friendly" bacteria to the milk (in this instance it is *Acidophilus*) causes the milk sugar (lactose) to turn to lactic acid and "sour" the milk, producing yogurt.

*Acidophilus* can be purchased as cultured or non-cultured bacteria. The easiest way however is to simply purchase a container of commercial yogurt like Dannon plain yogurt with *acidophilus*, as a starter. After that you can save your own culture from each batch for the next.

#### **Yogurt making tips**

- Yogurt made from pasteurized milk is often more successful because the "friendly" bacteria is not competing with the "unfriendly." This is important if you plan to save starter from each batch for the next one. Yogurt can be made immediately after pasteurizing by cooling the milk from 161 to 110 degrees F and then proceeding with making the yogurt, bypassing the warming step that follows in the directions below.

- Be careful not to use milk that is too hot when making yogurt. Temperatures over 115 degrees F can kill the *acidophilus*.

- Yogurt likes to be kept evenly warm and not disturbed during incubation. Electric incubators are available, but covered jars placed in a warm spot, (100-110 degrees) will work just as well. Some folks choose to place the jars on a heating pad and cover with a towel, others use their ovens or other heat source. I have never had a failure when using an insulated cooler. Simply place the covered jars in a cooler and add 100-105 degree water until it reaches the necks of the jars. Close the cooler and let set in a warm place until the incubation is complete.

- Adding more starter will not make the yogurt thicker, only more sour. Powdered milk or gelatin can be added for thickness.

For plain unflavored yogurt, the first step is to warm milk to 110 degrees F over low heat. Next add 1 heaping tea-

spoon of cultured starter for each quart of milk and stir gently. Remove from heat and pour into clean warm jars and place in a warm spot to incubate. Do not disturb. Yogurt is ready when thickened, usually 6-8 hours later. Refrigerate after incubation. Adding ½ cup of powdered milk or ½ pack of dissolved gelatin per quart of milk will make the yogurt thicker and more like commercial yogurt. This should be added before incubation. After incubation is complete, fruits, honey, vanilla, etc. can be added to the yogurt. Save some of the yogurt for starter in your next batch before adding any of these.

Flavored yogurt is easiest made by using flavored gelatin (like Jell-o brand gelatin). First prepare plain, unflavored yogurt as directed above, but do not add thickeners. Next dissolve 8 tablespoons of flavored gelatin in ½ cup of cool water and bring to a boil. Add to the yogurt before incubation. Fruit or jam can also be placed in the bottom of the container like commercial yogurts if you wish.

## **Cheese**

Cheese making is an art in itself, but many of the simpler varieties can easily be made at home. Homemade cheeses are generally divided into three basic groups: soft, semi-soft, and hard. All cheeses contain the same basic ingredients—milk, cultures or "friendly" bacteria, rennet, and salt. What makes cheeses different is the type of culture used and the way it is processed. Some specific types of cheeses require the addition of special powders or mold in addition to the basic culture. Colorings are also available to make the cheese yellow.

### **Rennet**

Milk coagulation is caused by adding rennet, which is either animal or vegetative based. It is available in either tablet or liquid form and is always diluted with a small amount of water before use. Both tablets and liquid come with dilution instructions and strengths but generally are diluted

as 3 drops of liquid rennet or ½ tablet to ¼ cup of cool water.

## **Cultures**

Cheese cultures are usually divided into two basic groups. Like *Acidophilus* in yogurt, they change the milk sugar (lactose) into lactic acid. Mesophilic culture is the one most often used in homemade cheese making. It does not like high heat and is used in soft cheeses, Colby, and Cheddar. Buttermilk is also made with Mesophilic culture and commercial cultured buttermilk can be interchanged in cheese recipes that call for Mesophilic cultures. Thermophilic cultures are used in cheeses that require high heat when processing like Mozzarella, Swiss, Provolone, and Parmesan.

Cheese cultures can be purchased as a freeze-dried powder that is simply added to the milk when making cheese. When kept in the freezer it will last indefinitely.

### **Soft Cheeses**

The easiest cheeses to make at home are the soft cheeses. They require no pressing, aging, or special humidity and temperature control. They do not take a lot of time in actual preparation, require little attention, and most of the equipment needed you probably already have. To make soft cheese, begin by heating 5 quarts of whole milk to 80 degrees F in a large kettle. Stir in ½ cup of commercial cultured buttermilk or ⅓ teaspoon of freeze-dried Mesophilic DVI culture. Add 2 tablespoons of diluted rennet, (dilute according to manufacturer's directions) and stir well. Cover and let set at room temperature for 10-12 hours. As coagulation occurs, a layer of whey will appear on the top of the curds. (Whey is used in Ricotta cheese and can also be fed to livestock.) Line a colander or other strainer with muslin, cheesecloth, or a clean pillowcase. Then pour the curds into it. Gather the corners of the cloth and tie with cord, then hang to drain. Draining can take 8 hours; when com-

plete, the curds will be of a consistency similar to cream cheese.

The cheese is now ready to be seasoned or flavored if you wish. Additives like garlic, chives, minced onion, hot peppers, powdered ranch dressing mix, and dill make tasty cheeses. Work the additives thoroughly through the cheese and shape into a patty or mound. Plain cheese can be used as cream cheese in recipes or frozen for later use.

Cottage cheese requires a little more preparation than basic soft cheese. Begin by warming 1 gallon of milk to 90 degrees F and add 1 cup commercial cultured buttermilk or ¼ teaspoon freeze-dried Mesophilic DVI culture. Next add 3 drops of liquid or ½ tablet of rennet (dilute first in a small amount of water) to the milk, cover and let set in a warm place to coagulate. When curds appear, use a long knife and cut into small cubes about ½-1 inch in diameter. Cut across the curds one way, then the other to form squares. Let the curds sit for 30 minutes, occasionally stirring slowly and gently to prevent them from clumping. Return to heat to firm up the curds. This is a matter of personal taste. The temperature at which you stop heating will determine the firmness of the curds. Curds are cooked when they no longer are custard-like in the center. Heat slowly, and gently stir frequently. Stop heating around 115 degrees F for softer cheese, 120 degrees for the firmer, "farmer style" cottage cheese. Dump the curds into a colander with small holes and drain off the whey. Rinse off with cold water and drain again. Add salt to taste and refrigerate after draining has stopped.

### Other uses for milk

Pigs, chickens, and other fowl love milk. If you have more milk than you can use, it is an eagerly devoured and nutritious feed that will help cut down on the feed bill. Most livestock seem to prefer it clabbered, which is easily accomplished with fresh milk by adding a glug of vinegar to a bucket of

milk and permitting it to sit for an hour or so.

Milk paint is very popular for interior decorating and for restoring furniture, both antique and faux antique. To make whitewash from milk, add 3 oz. of slake lime to ½ gallon of milk. Stir well, then add 3 oz. of linseed oil. Colored paint can be made by adding pigment to the above until the desired shade is obtained. Pigment is available in many hardware and paint stores, as well as art stores. You can make your own pigment from natural sources like clay, roots, and other vegetative matter. A smoother finish can be obtained if the paint is strained before using and lightly sanded after applying.

Adding milk to lye soap makes it kinder to the skin. To make wonderful milk and honey soap, first dissolve ¼ cup honey in ½ cup hot water. Next pour into a large enamel kettle (do not use aluminum) and add 2½ cups cold milk. Stir well with a smooth piece of wood or wooden spoon, and then slowly add 6 oz. (by weight) of lye, being careful not to breathe the fumes. The mixture will begin heating and get very hot. After it cools to 70 degrees F, warm 7 cups of rendered lard (or a combination of lard and palm or olive oil) to 80 degrees and slowly pour into the mixture. Stir constantly until it resembles thick honey, then pour into molds. Insulate the soap with blankets or a layer of newspapers so it will cool slowly. Allow to sit for 48 hours, then unmold and allow to cure for 6 weeks before using. Always work in a well-ventilated area when making lye soap and avoid breathing the fumes or letting the lye splash on you!

### Sources:

Caprine Supply, P.O. Box Y, Desoto, KS 66018

New England Cheesemaking Supply, P.O. Box 85, Ashfield, MA 01330.

Both these sources carry a variety of supplies and equipment for the home dairy. Many farm supply houses also carry a line of home dairying equipment. Δ

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# HOW HIGH ALTITUDES

## *affect home canning*

By Marjorie Burris

**A**fter I moved from a home at 1000 feet in elevation to my mountain home at 6200 feet in elevation, I discovered that I had to make some adjustments in my canning methods. Those adjustments were not very great, but they were vital. And when I learned the reasons for those changes, they certainly gave me the incentive to carefully follow the canning directions for the higher altitude.

The layer of air that surrounds the earth rises to a great height and is held to the earth by gravitation.

Air at high altitudes has fewer molecules per cubic inch than the air at sea level. When mountain climbers say, "The air is thin," they are correct. Understandably, thin air exerts less pressure than dense air.

If the air pressure on water differs from that at sea level, the boiling point is affected. Water becomes heated when its molecules are set in motion. Because dense air pushes down harder on the surface of a pan of water than thin air, it takes more effort at sea level to make water molecules bump around fast enough to get hot. Thus, the boiling point of water at sea level, and for all practical purposes up to 1000 feet in altitude, is 212 degrees F. But above 1000 feet the boiling point of water drops dramatically. At 2000 feet water boils at 208 degrees F, at

5000 feet it boils at only 203 degrees, and at 7500 feet at a mere 198 degrees. Because the microorganisms which cause spoilage in home canning are killed at definite high temperatures, and those high temperatures are not reached at the boiling point at higher altitudes, canning in a mountain home necessarily differs from canning in a seaside home.

### The four spoilers

There are four specific agents that cause spoilage in home canned foods: enzymes, molds, yeasts and bacteria. All are present in the soil, water, and air around us and all must be completely destroyed in the canning process if our food is to be safe to eat.

**Enzymes** are protein like substances that are formed in plant and animal cells and, among other things, they act as catalysts to ripen plants. If left to grow, they ripen, then over-ripen, eventually cause rotting. We blanch vegetables before freezing to stop the enzyme process and keep the vegetables at their best quality in the freezer. Enzymes are the easiest of the four spoilers to kill. They increase most quickly around 85 to 120 degrees F, and begin to be destroyed at about 140 degrees.

**Molds** are microscopic fungi that make dry spores, sometimes called seeds, which float in the air. When they light on food, they start growing silk-like threads that can become dis-



colored streaks or fuzzy mats. Some molds are not harmful. Those of us who enjoy a good piece of Roquefort cheese don't mind that particular mold a bit. But other molds can be very hurtful because they make poisons called mycotoxins. Also, molds eat the natural acid in food, thereby lowering the acidity that protects us against more dangerous bacteria.

Molds can live below freezing, but don't start to grow until about 32 degrees F. They grow best between 50 and 100 degrees, then taper off to inactivity around 120 degrees. They begin to die at an increasing rate between 140 and 190 degrees.

**Yeasts** are also fungi, but they multiply by dividing their spores which in turn causes fermentation. We want a certain kind of yeast in bread, beer, and sauerkraut making, but we absolutely don't want it in our applesauce. Severe cold holds yeasts inactive. They grow best between 50 and 100 degrees and temperatures from 140 to 190 degrees destroys them.

**Bacteria** are the most dangerous of the spoilers and they are the hardest to kill. Bacteria spoilage falls into four groups: (1) fermentation, recognized



**Table 1. Boiling water bath**

Altitude	Increase processing time if time called for is:	
	20 minutes or less	More than 20 minutes
1000 feet	1 minute	2 minutes
2000 feet	2 minutes	4 minutes
3000 feet	3 minutes	6 minutes
4000 feet	4 minutes	8 minutes
5000 feet	5 minutes	10 minutes
6000 feet	6 minutes	12 minutes
7000 feet	7 minutes	14 minutes
8000 feet	8 minutes	16 minutes
9000 feet	9 minutes	18 minutes
10000 feet	10 minutes	20 minutes

by the formation of gas and acid, causing souring of food; (2) flat sour, in which acid is produced, but no gas formed; (3) putrefaction, characterized by gas, bad odor, and sometimes darkening of food; (4) toxins or poisonous substances, which may show no visible signs of spoilage.

There are other disease causing bacteria, but *Salmonella*, *Staphylococcus*, and *Clostridium botulinum*, which makes the deadly botulism toxin, are the most common. *Salmonella*, in addition to being in the soil, water, and air, is carried by pets, rodents, insects, and human beings and is so plentiful it is a good thing it is relatively easy to kill. *Salmonella* can live in frozen foods, are not very active below 45 degrees and can be killed if held for 20 minutes at 140 degrees, but are destroyed much quicker at higher temperatures.

*Staphylococcus* is a different matter. The bacteria itself can be slowed if the food is kept below 40 degrees or above 140 degrees, and is killed at the same temperatures as *Salmonella*. However, "staph" makes a poison when it is growing that is not easily destroyed. It takes many hours of boiling at 212 degrees or 30 minutes at 240 degrees to kill the staph toxin. And 240 is 28 degrees above boiling at sea level, and it can only be obtained in a pressure cooker.

Then there's that meanest of mean, *Clostridium botulinum*. This "bug" is carried into our kitchens on everything—clothes, hands, raw foods, implements, you name it. And it thrives at a room temperature of about 70 degrees up to 110 degrees. After that, it makes spores, and those spores cannot be destroyed unless they are subjected to at least 240 degrees F for a substantial length of time. To make matters worse, the bacteria lives in the absence of air and likes a very moist environment. A can of vegetables setting on a pantry shelf provides these conditions perfectly.

Finally, there's one last straw. When the spores are growing, they throw off a deadly toxin so powerful that one teaspoon of the pure substance could

kill hundreds of thousands of people. Fortunately, the botulism toxin can be destroyed by brisk boiling for at least 15 minutes, with 20 minutes required at higher altitudes and for dense foods. This is why good canning books give a warning not to taste non-acid, canned foods before boiling, and if the food foams, smells bad, or looks bad during boiling, to destroy it completely without tasting it so it can't be eaten by people or animals.

### How to kill those spoilers

The four most used methods for preserving foods at home are freezing, dehydration, osmosis (commonly called pickling or brining), and sterilization by heat. Freezing is not affected by high altitudes, but one has to have access to appliances and power.

Dehydration is a fairly easy process at high altitudes. In fact the thin air of most mountainous areas, combined with the windy conditions, dries food rather quickly. This is a satisfactory method because a moisture content of below 35 percent directly inhibits the growth of the spoilers, even the hard to kill botulinum. Because most home processed foods are dried out to the point where they have only about 10 to 20 percent of the water in their original fresh state, dried foods keep well at high altitudes.

In osmosis, or pickling, the brine draws juices out of foods and forms

**Table 2. Pressure canner**

Altitude	Raise pounds to:	
	If 10 pounds	If 15 pounds
1000 feet	10½ lbs.	15½ lbs.
2000 feet	11 lbs.	16 lbs.
3000 feet	11½ lbs.	16½ lbs.
4000 feet	12 lbs.	17 lbs.
5000 feet	12½ lbs.	17½ lbs.
6000 feet	13 lbs.	18 lbs.
7000 feet	13½ lbs.	18½ lbs.
8000 feet	14 lbs.	19 lbs.
9000 feet	14½ lbs.	19½ lbs.
10000 feet	15 lbs.	20 lbs.

lactic acid which prevents spoiling. If you think of micro-organisms as invisible snails, and you are pouring a salt solution on them, you get a good mental picture of preserving by pickling. The pickling process could take a little longer above sea level, but it is still a satisfactory process for higher altitudes if all directions are closely followed.

Sterilization by heat requires more adjustments at higher altitudes than the other methods of preserving foods, but if it is used correctly, it can be used up to about 10,000 feet. However, the long boiling time or the high amount of pressure needed to sterilize food above 8000 feet take their toll on the flavor and texture of the end results. Other methods of preserving foods might better be utilized at very high altitudes.

**The boiling water bath** is used to can strong acid foods because the kinds of food spoilers which can grow in a strong acid medium are killed at 212 degrees F. Strong acid foods are fruits, pickles in a vinegar solution, and some tomatoes. A few new varieties of tomatoes are low-acid and must be treated like other vegetables and meats. These new types of tomatoes, vegetables, and meats can only be canned safely in a pressure canner at any altitude, including sea level.

But if we can't get the temperature of boiling water to reach 212 degrees F at altitudes above 1000 feet, what do we do? We compensate for the actual heat in the boiling water bath by adding time, which is the same reason that a cook in Denver must boil potatoes longer than a cook in San Francisco does. Perhaps this is the origin of the old saying, "Boil it to death."

Home economists have determined a set rate of increase in cooking time for every 1000 feet above sea level and have made a handy altitude chart for quick reference. Almost every good canning book includes this chart. I repeat it here for your convenience. See Table 1. You will note that the

chart is divided into two sections: one section lists the number of minutes to add to the boiling time if the directions for the processing time is 20 minutes or less. The other section lists the number of minutes to add to the boiling time if the processing time is over 20 minutes. For safe canning, under no circumstances should the processing time ever, ever be shortened.

**The pressure canner method** is the best method of heat sterilization to use at high altitudes even for high-acid foods. The tight fitting lid on a pressure canner holds the steam inside the pan until it reaches the pounds of pressure shown by the gauge on the lid. The pressure exerted on the water in the pan makes it harder for the water molecules to move around, thus raising the temperature of the water. Because we create more pressure, we can raise the temperature of the water well above the point needed to kill any food spoilers. At high altitudes we increase the number of pounds of pressure, not the length of processing time. This lets us process foods safely in shorter periods of time.

Again, home economists have devised a quick reference chart which lists the number of pounds of pressure to use at a given altitude. See Table 2.

Do you know the exact altitude where you live? It very well could affect the length of time or the amount of pressure you need to use to safely can your food. Δ

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# ***Make a sure-fire LIVE TRAP***

*By Charles Sanders*

**E**very now and then, wild critters wear out their welcome around the homeplace. Gardens are raided, garbage cans ransacked, pet food filched, and other shenanigans are performed by marauding little beasties. When push comes to shove, it becomes time for a furbearer relocation project.

Although many states permit the killing of wild animals when they are destroying gardens, chickens, or other property, I hesitate to do so outside of the legal hunting or trapping season. It just seems like a waste. Sometimes, however, pestiferous pilferers need to be taken care of during the spring or summer months. Then, I break out the trusty livetrapp and get to work. In fact, if you live near a town of any size at all, you can make some good money by livetrapping and relocating wild animal pests. Be sure to consult with your local fish and wildlife manage-

ment agency before you undertake this endeavor because regulations vary widely across the country.

I have had to move many animals here on our place. Most of them were raccoons that took a liking to the cat's food, the mulch pile, and the tastiest parts of the garden. We relocated one family of the masked varmints by catching them, one each night for about a week. They were so eager to get caught that they climbed right up in the back of the pickup truck to get to the peanut butter and marshmallows that I had placed in the livetrapp there.

The trap described here is simple to make. As with many of my workshop projects, I just used what I had avail-

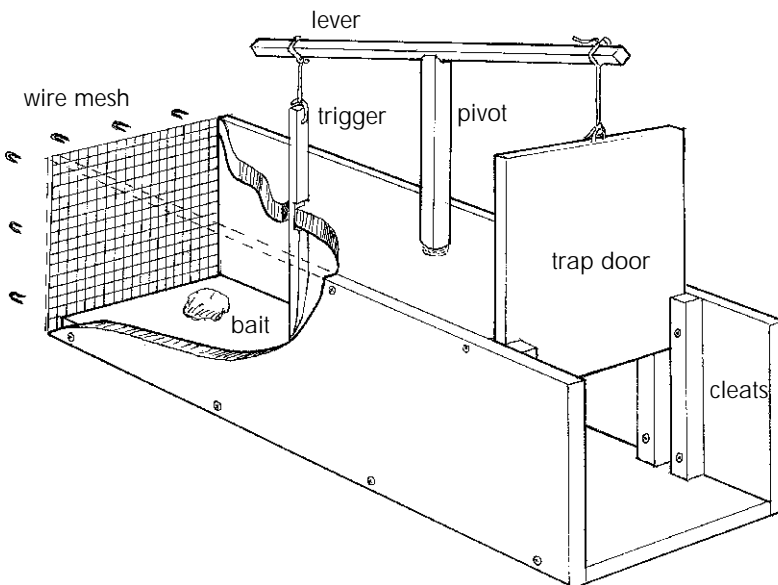


able to do the job. You may wish to adjust the size of the trap you make to fit the target animal you are trying to catch. Here is an idea of appropriate sizes:

Raccoon	12" x 12" x 36"
Opossum	10" x 10" x 32"
Skunk	10" x 10" x 32"
Cottontails	8" x 8" x 28"

The accompanying photograph and drawing show various details of the livetrapp construction. Some of the specific parts for this rabbit-sized trap are listed below:

3 1" x 8" x 28" boards
1 1" x 8" x 24" board
7½" x 9" piece of ½" hardware cloth
12 light wire staples
24 #6 x 1½" multi-screws
about 4 ft. of ¾" square wooden stock
about 3 ft. of ½" square wooden stock
1 pc. of ½" x 12"-square wooden stock
string



The trigger for this trap is simplicity in itself. In a nutshell, the notched trigger stick is held in place in the hole in the top of the trap. When the animal tries to reach the bait, it must push past the trigger stick, releasing it and causing the door to drop behind it.

The trigger stick is made from the piece of 1/2-inch stock. It has a notch cut into it that is hooked on the edge of the hole to set the trap. The notch is about as deep as one half the stick's thickness. Cut the notch a bit longer than the thickness of the top. That will give it plenty of room to get knocked loose.

As you can also see, the trap door is held in place by the lever stick which is made from the 1/2-inch stock. The lever stick is supported by a notched stick about 9 inches long which is made from the 3/4-inch wooden stock. I rounded the bottom corners of the support stick and secured it in a blind hole bored into the top of the trap.

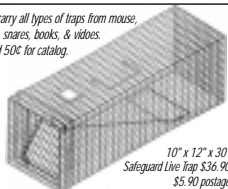
The sides of the trap have cleats attached to provide a groove of sorts that the trap door slides in. Those cleats are also made from the 3/4-inch stock. The trap door has a light wire staple in the center of the top. A piece of stout string attaches the door to the end of the lever stick. On the other end of the lever stick, another piece of string is threaded through a small hole drilled through the trigger stick.

I attached a wire mesh back panel in the trap to aid in distribution of the scent of the bait. The stout hardware cloth is necessary to prevent determined detainees from busting out. Δ

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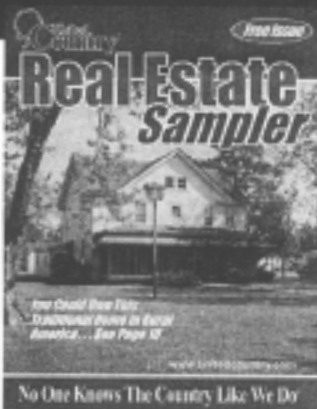
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# A tip from Alaska on making natural dogfood

By David Sneed

**A** century ago, Alaskan residents had no choice but to make their own dog food. At that time most of the dogs in the territory worked hauling freight for mushers and miners, or served as companions and protectors of early homesteaders. They were usually of mixed breeding, and much larger on the average than the racing huskies made famous by the Iditarod and Yukon Quest competitions. Fortunately for their human companions, there was an abundance of fish and game with which to feed them.

The practice of producing dog food at home fell by the wayside after the advent of regular barge service made it easier to pick up a bag of dried nuggets at the local market. For awhile, that was cost effective, but the rising prices of the dominant shipping firms have added so much to the cost that many Alaskans have rediscovered the

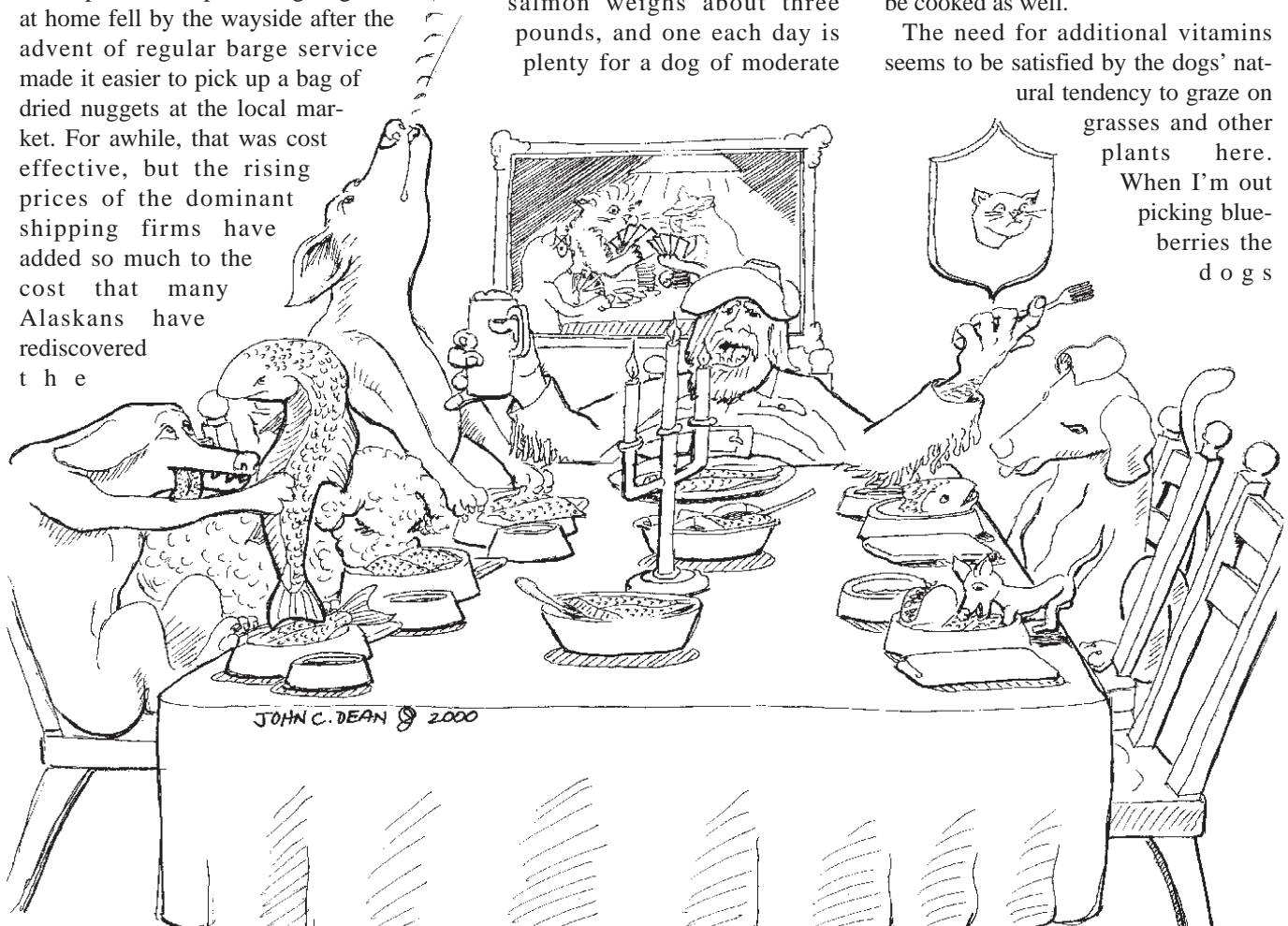
practice of making their own. For some folks and their dogs, this is simply an imitation of the drying and freezing techniques used for preserving salmon a century ago. For others, producing their own dog food involves a fair amount of cooking and the use of the latest veterinary studies concerning dog nutrition. The choice of either system or a hybrid thereof depends upon the kind of dog being fed, the available resources, and the climatic region in which the dogs live and work.

The most natural food to use here is salmon, which arrives in abundance and is easy to harvest. A gutted pink salmon weighs about three pounds, and one each day is plenty for a dog of moderate

size. A large dog can use a couple of them, and for the jumbo-sized malamutes, mastiffs, and Irish wolfhounds at least three are a good idea.

The only reason Alaskans cook the salmon they serve their dogs is to make it easier to digest. The parasites that cause the often deadly "salmon poisoning" in the lower 48 states are not active here, and when the salmon are running, we often feed them to the dogs uncooked. Smaller dogs may have a harder time digesting raw fish, though, and other species are always cooked, even for larger mutts. Anywhere south of Ketchikan, however, it is recommended that the salmon be cooked as well.

The need for additional vitamins seems to be satisfied by the dogs' natural tendency to graze on grasses and other plants here. When I'm out picking blueberries the dogs



are usually enjoying as many plump berries as I am. They seem quite adroit at harvesting the giant blue-black huckleberries so common here. I suspect that the dogs get much of their vitamin C from the berries and wild rose hips. Between the berries, wild grasses, and salmon, their diet closely resembles that of their local carnivorous cousins, the bear and wolf. Sometimes they even harvest wild rodents. In the southeast panhandle portion of Alaska, there are no outbreaks of rabies, hanta virus, or plague, so getting a deadly disease from mice or squirrels is not a worry. However, in the interior, northern, and western regions of Alaska, rabies is a real concern.

With the exception of winter king salmon, our salmon comes in a rush between June and September, so a homesteader's task is to preserve the fish for winter consumption. A few people "can" salmon for their dogs. However, fish must be pressure-canned to prevent botulism, and when you're feeding a bunch of dogs, that involves a lot of expense and effort. Fortunately, there are some alternatives.

The interior and western portions of the state have the kind of fall and winter that enable a simple drying and natural freezing that will usually preserve the fish until it is used. The situation is quite different in the moderate coastal region that runs in a long curve from the Southeast Panhandle all the way to Kodiak and the Aleutian islands. Winter-long freezes cannot be counted on there, so salmon is canned, frozen, or salted for future use.

For larger dogs who love to chew, the salmon can be fed in a frozen chunk. They are entertained while they feed. For dogs with more tender palates, it's best to thaw and cook the fish. This means thinking a day ahead, to provide time for the thawing.

Feeding dried fish can be a little trickier for smaller dogs. Although the meat is filleted away from the spine of the salmon before drying, tiny "pin"

bones remain, and can be somewhat brittle compared to those in pressure-cooked fish. This doesn't seem to be a problem for larger dogs, and many huskies were fed this way historically. If it's a worry, only dry the filleted tail sections, as they have no pin bones. The main sections can then be canned or frozen. In any case, a bit of cooking will soften the remaining bones. Also, when feeding dried fish, remember your dogs will need more water each day.

Other fish, such as halibut and the ever-so-common gray cod can be cooked for dogs as well, although they lack the massive amounts of omega-3 fatty acids present in wild salmon. I've also used crab shells and waste crab meat in the dog food. Moose, deer, and caribou scraps are also good for the mutts. One caveat, however—while Alaskans generally aren't in the habit of volunteering information to the local fish and game authorities as to exactly what parts of the wild critters went into the stew pot for the pets, it behooves the cautious, conscientious person to acquaint themselves with the local regulations as to what may or not be utilized as animal food. Each state has different rules about their fish and game, and they often change, so read your local regulations before you make your version of Alaskan home-style dog food.

When fish and game are lacking, I renew acquaintances with workers in local meat markets, obtaining cheap and sometimes free byproducts suitable for canine consumption. Sometimes it's just bones to boil off, or products past their pull date. There's a material called bone dust, which is gathered at the end of each day by the butcher as he opens and cleans the band saw used for cutting steaks and chops. This material should be cooked if there is any chance at all that some of the finely ground particles of meat and bone came from pork.

Just as man does not live on bread alone, the dog must have more than

just meat. If I don't mix enough cooked vegetables and barley into their ration, my varmints seem to crave and pursue items from the root cellar. They will chew their own raw spuds, carrots, and beets, but they get more out of them after cooking. Spinach is very popular in season, and I can dry it for use throughout the winter.

I am careful not to let the dogs have much of any member of the cabbage family, because there are mixed reports on those plants' toxicity for canines. Besides, dogs eating them often produce horrendous gas clouds that drive humans from the house. I am also moderate with my use of garlic as well, although I often use a clove hidden in a wad of burger of fish as a successful, one-application wormer.

A friend of mine with two Irish wolfhounds says that finely ground flaxseed is an important addition to the food when salmon is unavailable which is an alternate source for the omega-3 fatty acids. He also recommends that finely ground egg shells accompany any use of the yolk or white. He is one of those Alaskans who spends more time cooking for his dogs than for himself. Of course, those same dogs get to occupy the best spot on the couch, and they usually choose which video to watch. I don't know how many times they've seen Turner and Hooch, but the tape is wearing out.

As for any creature, a dog's cravings should be noticed, and with the important exception of chocolate or sugar, they should have what they seem to want. When Bonnie comes out of the root cellar with a beet in her mouth, or Rufus helps harvest the spuds, I figure they're telling me what they need to eat, and I listen. Potatoes often find their way into the dogs' stew-pot. My dogs live to a ripe old age without any sign of hip problems or other major ailments, and seem to enjoy life to the fullest.



Any sudden change in diet or environment can be rough on a dog, so introduce new foods gradually. Be open to the fact that your particular dog may not be able to enjoy as wide a range of foods as we feed them here in Alaska, and don't hesitate to seek veterinary attention if a changed diet brings persistent loose stools, constipation, skin problems, or changes in behavior. I've noticed that my dogs become much more aggressive (at least to each other) when fed a diet high in bear meat. Local folklore says bear has a lot of adrenaline, so while the fats therein are good for the dog, the adrenaline may lead to other health or behavior problems. Also, bear meat *must* be thoroughly cooked before feeding it to dogs, due to its high level of trichinosis and other parasites. It should also be balanced with plenty of vegetables. And, like Gramma used to say, moderation in all things.

It may seem like we go to great lengths to care for our dogs here, but when you're walking in the woods and see a three quarter-ton brown bear drop and charge, and Bucky Big Dog and Goliath stand between you and a most gruesome demise, you gain a new appreciation for why dogs were domesticated. Or, as one of my archeology professors once theorized, it's why dogs and humans evolved together into a mutually domesticated relationship.

It's not just the big dogs either. Bonnie Wee Lass is a border collie mix that grew in stature and filled the 10 feet between me and a disgruntled male "brownie" one evening last summer, distracting the bear until Bucky Big Dog arrived on the scene and drove him away.

Defense is an important way in which dogs are endeared to our hearts, but the most poignant role comes to light in late winter, when you've had enough of the long darkness, the whiskey's gone, you're bored with what food you have left, and you're feeling rather lonely. Tippy, Gabby,

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# Ayoob on Firearms:

## Bear medicine

**M**any years ago, I was with the camera store guy as we looked at the photos he had just developed for me. They were close-ups of a good size black bear sow and her cub up a tree. “Wow,” he said, “what did you use?” I forget the exact camera combo, but I remember the rest of the hardware, and my answer was something like, “Nikkormat body, 80mm lens, Tri-X, and a Smith & Wesson Model 29 .44 Magnum.

No, I didn’t shoot the bear. But both I and the conservation officer I accompanied had left the doors of the patrol car ajar so we could scramble back quickly. This proved not to be necessary, and after a while we were able to persuade Mrs. Bear and her cub to leave the area. Though no shots were fired, the 8<sup>3</sup>/<sub>8</sub>-inch barrelled .44 Mag on my hip was a most comforting presence, and I noticed that the conservation officer didn’t leave his .357 Magnum service revolver in the car, either.

If you live in bear country, face the reality: bears are dangerous. You can get ruined by bruises real easy. According to the authoritative publication, *Bears and Other Top Predators* (vol.1 no. 1), seven human beings were killed in North America in 1998 by bears, and a larger number were mauled, often with permanent consequences. The lead-off article on the topic by Kathy Etling quoted the National Park Service as saying that “fewer than one person in 2.2 million visitors to North American national parks was injured by a bear in the period from 1900 to 1985.” This was cold comfort to those who came out on the wrong side of the odds.

More insights come from the editor of *Bears*, Carter Mackley. “The bear formula pepper sprays have proven more effective than many people dared hope,” he told me, “and handguns have proven more efficient than long guns. The attack often happens so fast that the victim can’t access the rifle or shotgun, or can’t bring it into position because the animal is already on top of him.”

This was borne out by some of the bear attack survivors Etling quoted in her excellent article. Attacked by an eight-foot grizzly that first became visible only 10 feet away, Mark Rutledge was unable to bolt a cartridge into the empty chamber of his rifle before the bear was on him. He was severely mauled before his hunting partner was able to kill the bear with two shots from a .30/06. Patrick Van Vleet had lowered his rifle to reach for his pepper spray because he didn’t want to shoot the female griz that was 20 yards away. When she charged, 20 of Van Vleet’s paces turned out to be two bounds for the sow. “I threw my gun at her since I had no time to shoot,” he said. His pepper spray was not effective, and he was pretty well chewed up. Keith Rogan “had no time to shoot” when, while hunting deer with a high powered rifle, he was jumped by a bear that first became visible to him at 10 paces.

Some attacks have come on bird hunters. When in bear country, have shotgun slugs in your pocket that you can quickly stuff into your bird gun. Grouse hunter Larry Wickler was attacked by a bear that shrugged off the one blast of tiny-pellet #7½ bird-shot he was able to fire into it at 20



**Massad Ayoob**

feet. He short stroked the pump action, jamming the gun, and was bitten twice when the 12-gauge failed to fire on the second try.

Long guns get set down out of reach or slung in positions that are slow to deploy from. Attacked by a brown bear while carrying a buck he had harvested, Max Mielke “didn’t have time to get his gun before the bear was on him.” He suffered multiple puncture wounds in the subsequent mauling.

The .44 Magnum revolver is the most popular common-sense handgun in bear country. I would recommend a double action. The single action revolvers have “plow-handle” grip shapes that often require regripping between shots to return to firing position, and demand great dexterity to thumb cock for each shot under great stress and during strenuous effort. A double-action .44 allows you to simply jam the muzzle into the bear at the appropriate spot and pull the trigger six times in a second and a half. The Ruger Redhawk and Super Redhawk, the Dan Wesson, and the now-discontinued Colt Anaconda are all excellent double action .44s, but tend to be big and bulky. The lighter Smith & Wesson, particularly with 4-inch barrel and most particularly the ultra-light



Mountain Gun version, are more likely to be on your person if you are attacked by surprise. Wear a secure holster so the gun won't go flying out of reach if the initial attack knocks you butt over teakettle. You want deep penetrating Magnum rounds. The best, which may have to be specially ordered by your gun dealer, would be the 305-grain Garrett or the Cor-Bon with 320-grain SSK bullet.

The more powerful .454 Casull revolvers would be better medicine for bears, and Taurus now makes a five-shot double action in that caliber while Ruger makes a six-shooter in the same caliber. Winchester's .454 ammo is comparable in power to standard loads for the old .45/70 "buffalo rifle." Again, though, these revolvers are big, heavy handguns that will tempt you to leave them in the Jeep or strap them to the frame of your backpack where you might not be able to reach them in time.

Bears have been killed in emergencies with the less powerful .357 Magnum. African game ranger Phil Honeyborne carries a Colt .45 automatic with GI hardball, a round that will go through 26 inches of muscle tissue simulant. He has investigated many lion and leopard attacks on humans, and feels confident that eight of these big bullets piercing that deep can save him from a big cat. You'll note that lion hunters and brown bear hunters use the same type of high powered rifles for these soft-skinned but dangerous animals: .300 Magnum minimum, with .338 Magnum being better, the heavy .375 Magnum better yet, and some veterans favoring the .458 Magnum "elephant rifle" with 510-grain softpoint bullets.

My friend Rick Devoid lives on a beautiful property in rural New Hampshire. The black bears that share his land are creatures he never wants to hurt; they're part of the charm of the place. But, he faces reality. Whenever he steps out of the house, he's wearing his Government Model .45. Another good auto pistol in case

of ursine attack would be a 10mm loaded with deep-driving Pro-Load full metal jacket ammo. Small arms authority Chuck Karwan packs a Glock 20 with 16 rounds of that stuff when he's walking in the woods.

Keep in mind, however, that with the animal right on top of you, you might have to fire at contact distance. Shoving the muzzle of a semiautomatic pistol into the animal's body could push the barrel and slide out of battery (firing alignment of the parts) and prevent you from discharging the gun. Blood and flesh backslash into the parts while they're cycling could also jam a semiautomatic. The revolver is much more forgiving at muzzle contact. This is why the .44 Magnum would be my personal prescription for constant-carry bear medicine: it may dispense only six pills, but the dosage is "six for sure."

This is about bear attack survival, not bear hunting. You can see it as less than one victim per 2.2 million, or you can see it another way. Suppose you were sharing your environment with an eight-foot tall serial killer who weighed hundreds of pounds and was subject to violent mood swings. You know for certain that he carries multiple edged weapons in his fur coat, and has killed seven people and mutilated a lot more in just one year. Would it occur to you to constantly carry an appropriate gun for protection of yourself and your loved ones for so long as he is at large?

That's exactly the situation when your backwoods home is located in bear country.

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## Lessons from the Winter Nationals

I just got home from the 2000 Winter National Championships of the International Defensive Pistol Association (IDPA), conducted at Smith & Wesson Academy in Springfield, Massachusetts. I entered as defending champion in Senior class. I didn't leave that way. There were lessons to be learned. It's a short column, so I'll just start enumerating those lessons now.

**Make Every Shot Count.** The first event I shot was a replicated bank robbery scenario where you've run up against the escaping armed thugs. Blinded by their headlamps, you have to shoot out the headlights before you fire into the car from which they're supposed to be shooting at you. This requires six shots, and I had a six-shot Smith & Wesson Model 686 revolver. I missed my second shot, at one of the headlights. Under IDPA rules, you can't leave an unneutralized target behind (it's presumed that it will kill you as soon as you leave cover) and you can't leave cover

without a fully reloaded gun. So, I had to reload, fire one more shot, do a "tactical reload" in which spent cartridges are saved in the pocket (IDPA considers it bad survival form to leave live rounds on the ground behind you) and as soon as I shoved another six-round speedloader into the cylinder, head off to handle the rest of the scenario. I was behind the curve from the beginning.

**Lesson:** I shot too fast. If I'd slowed down by a hair and sent that second of six shots as true as the other five, I would have had a good run. Other lesson: this is why cops went to high capacity semiautomatics from their six shot revolvers.

**Don't cheat yourself on power.** Several shooters were quietly, discreetly disqualified because they rode to the edge of the lightest ammo that would supposedly make minimum standard. When tested on the chronograph, a device that measured velocity, their ammo failed.

The ammo in your gun is the pur-

pose of the gun: the firearm is the launcher, but the projectile is the key to the mission. It has to be running as powerful as you can stand in terms of recoil. I was glad I was shooting Triton 125-grain +P in my revolver.

The match came less than 10 days after the acquittal of the four New York officers in the Diallo shooting. The reason it took 41 shots fired and 19 hits for the man they thought had pulled a gun to fall down was that their department had issued them feeble full metal jacket ammo for their 9mm pistols, instead of hollowpoints. With the proper ammo, Diallo would have gone down sooner, perhaps before he suffered the very few of those 19 wounds that would prove lethal.

**Check the Corners.** There was one “house-clearing” stage where many of the shooters came to grief, failing to find a “bad guy” hidden in a corner and incurring the heavy penalty of an unneutralized threat. The target shooters tended to miss this Bad Guy. The serious shooters (cops and trained armed citizens) almost always got him in time.

**Try to watch the background.** Under stress, “tunnel vision” kicks in, and you focus on the perceived threat. On another bank robbery stage, several champions succumbed to this and “shot through” the bad guy target while an “innocent fleeing victim” target was “running” behind it. I would judge them more harshly had I not put three bullets into “no-shoot” targets myself on that stage. It’s an easy mistake to make, and the easy mistakes are sometimes the ones we have to most vigilantly guard against.

**Be able to reach your gun in an emergency.** No gun locks will keep six-year-olds who live in crack houses from accessing the stolen guns of drug addicts. In this match, we learned that a gun in a container you can’t immediately access is hopeless. One shooter was unable to get his gun out of the “lock-box” from which we



*Ayoob congratulates his graduate, Joyce Fowler, on winning National Woman Champion honors at the shoot. She was awarded a knife suitably engraved.*

all had to start the stage. The box literally “ate his gun,” a \$1200 HK P7. In the match, the sponsors let him start over, using his backup SIG pistol out of another case until they could get the “lock-box” unlocked. In real life, the evidence technicians would have found the locked-up gun after

*If you focus on accomplishing the tasks, the goal will achieve itself. If you focus on the goal, the tasks necessary to accomplish that goal will go undone, and the goal will not be achieved.*

someone smelled his corpse rotting and called the cops.

**A slow hit that’s “just in time” beats a fast miss.** On one stage we had three runs at four 8-inch steel disks 10 paces away. A dozen hits required. I lost count of the people who emptied whole 10-shot magazines at a single 4-plate target array and still had “hostile threats” standing up looking at them. I thought I did that stage pretty well, with 13 shots for 12 targets—the same number fired by World Champion Rob Leatham, who posted the top score at the event with a Springfield Armory pistol—

and it was sad when the range officers told us that only 5 out of 200 competitors had dropped all the plates without missing a shot. The famed Border Patrol gunfight master Bill Jordan said it all: “Speed’s fine, but accuracy’s final.”

**Stay focused on the task.** Last year at this event, I thought about what I was doing with a total intensity of focus, and ended up with a national champion title. This year, I didn’t ... and didn’t. This is the history of coping with crisis. If you focus on accomplishing the tasks, the goal will achieve itself. If you focus on the goal, the tasks necessary to accomplish that goal will go undone, and the goal will not be achieved. I teach this every week to students, and on this day didn’t heed it myself. Another lesson: If thou believest thy preachings, then do as thou preach!

A word about the International Defensive Pistol Association: it is designed to allow “ordinary guns” instead of the super-expensive custom firearms required in so many other handgun competition disciplines. A traded-in surplus police revolver that costs \$200 will do fine in Stock Service Revolver class. One of my graduates, Joyce Fowler, won the National Women’s Championship with a Beretta 9mm service pistol similar to the one L.A. cops carry on duty. Dave Sevigny won Stock Service Pistol class with an out of the box Glock 9mm. For more info on this organization, surf your computer to [www.idpa.com](http://www.idpa.com), the IDPA website.

In this regard, IDPA shooting is a microcosm of people in crisis, the kind of crisis it attempts to replicate in its emergency-based skill testing. As I tell my students, “It’s not about the tool, so much as it’s about the user ... and it’s not about the user of the tool so much as it’s about his or her use of proven techniques for coping with the problem.” Δ

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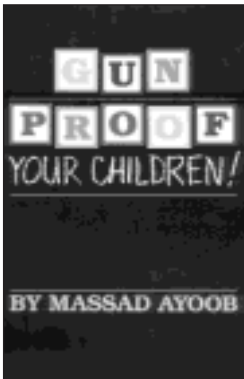
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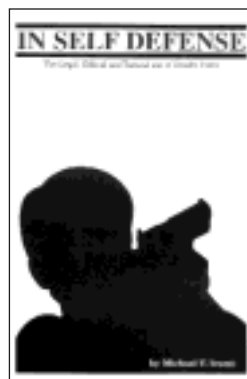
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# Good homemade jerky

By Charles A. Sanders

Jerky was once a common and vital trail food. This was because jerky is light—it weighs about one quarter the amount of fresh meat—and, if stored so it is protected from moisture, it can easily last through a year. Jerky could also be eaten without the need for preparing a fire or using utensils, which would slow down the traveler. Many a frontier traveler merely shaved or gnawed off a chunk of jerky and chewed while walking or riding.

Traditionally, jerky is merely strips of thinly sliced meat that have been dried. Usually, the meat was hung to air dry on wooden racks. Sometimes, where insects or humidity were a problem, a low smoky fire was built under the drying meat. The smoke, from burning just about any hardwood, imparted flavor, kept the bugs away, and perhaps helped in the preservation process as well. The low fire was important because too much heat would cook the meat instead of allowing it to dry.

Today hikers find jerky lightweight, satisfying, and easy to carry. Hunters often carry some for a quick snack or lunch. I sometimes take a few pieces along when I'm out cutting wood. Whatever the reason, jerky is still a versatile, tasty, and nutritious food. It is a good way to preserve venison or beef or other good, lean meat. In fact, here at our place, we have been digging down into the bottom of the freezer, cleaning it out in preparation to have another beef butchered and I am using up some roasts and other cuts by converting them to jerky.

I've made jerky the traditional way, cutting and drying thin strips of meat from which the fat, sinew, and membranes had been trimmed, and it was marinated overnight. Each strip of meat was then pierced near one end with a toothpick and the strips were then hung from a wire oven rack that I had suspended above our woodstove.

I recommend using frozen meat to make jerky. There are many parasites that exist in both domestic and wild animals that can be transmitted to humans. Freezing of the meat helps to kill the critters.

As a rule of thumb, meat that is less than an inch thick should be frozen for about 30 days. Thicker pieces should be frozen for 60 days before making them into jerky. In fact,

when we are getting ready to have a new beef butchered, we go through the freezer and use the remaining packages of beef to make some jerky because we know they have been frozen for well over the 60-day period.

Slice the trimmed meat into long thin strips about ¼ inch thick. It is important that as much fat as possible be trimmed away as fat will not allow the jerky to dry as thoroughly as it should and fatty jerky will not keep as well

either as the fat itself may turn rancid. If you work with the meat before it is completely thawed, it will be much easier to slice. Slice the strips with the grain or along the length of the muscle fibers to make chewy jerky. Cut across the grain, or across the muscles, to end up with more tender jerky. I personally prefer the cross-grain slices.

For most of us, the thought of eating jerky that has been merely sliced up and dried doesn't sound too appealing. Unseasoned and dried beef or deer strips taste a bit bland. In fact, the first time or two I made jerky, I under-seasoned the meat and it lacked the flavor I was hoping for. On the other hand, I added far too much black pepper to some antelope jerky once. It would make your eyes

water. To save you some of the same trouble, below are some good ways to prepare the meat before drying.

## Three jerky marinades

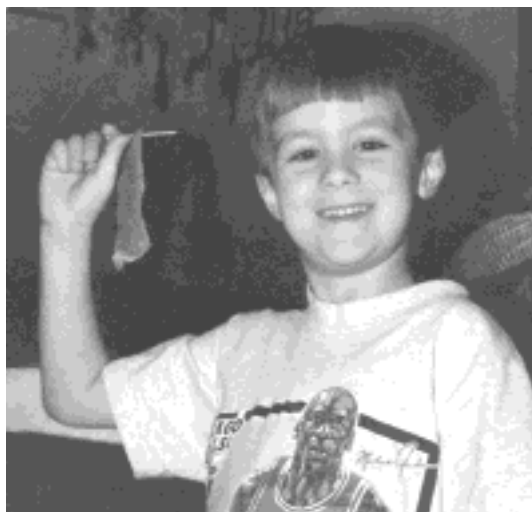
When preparing the jerky from strips of meat, a good marinade is recommended. Here are some good marinades for soaking your jerky strips in prior to drying.

### Easy jerky marinade:

1 cup pickling salt 1 gallon water
---------------------------------------

Mix the brine well, allow the strips to soak for about 24 hours. Pat them dry and place in the dryer.

Many folks prefer their jerky slightly spiced or peppered. This is pretty much a matter of preference, particularly when using hot peppers. Here are two good marinades for spicier jerky. For these two recipes, just mix all the ingredients together and marinate the meat for roughly two hours, but no more than three hours or the jerky will be too strong.



*The author's son holds a strip of meat ready to place on the drying rack.*

**Seasoned jerky marinade (for one pound of meat):**

½ cup soy sauce  
1 Tbsp. Worcestershire sauce  
½ tsp. black pepper  
¼ tsp. ground hot pepper  
¼ tsp. garlic powder  
½ tsp. onion powder  
1 tsp. hickory smoke-flavored salt

**Cajun-spiced jerky (for one pound of meat):**

¼ cup soy sauce  
½ tsp. black pepper  
¼ tsp. garlic powder  
1 tsp. salt  
2 tsp. Cajun spice

**The squirt-gun method**

Not all jerky is made from sliced strips of meat. A new twist on jerky making involves using a device that looks like a cross between a cake decorator and a caulking gun. This jerky gun squirts out a neat, uniform strip of meat for drying. The method works well but does require running the meat through a grinder to allow it to be pushed through the gun. There are a couple of ways to do this. If you have an old crank sausage grinder, it will do a fine job. I opted for modern technology and used the electric food processor. It did a great job. Either appliance should turn out meat minced fine enough for squirting through the gun. Using this method, the resulting strips of jerky are a little more manageable to eat, having been made from tiny bits of ground meat, rather than a single strip of meat fibers. There are a few manufacturers of these devices. The one I used is made by American Harvest.

I used a home blend as described above on one batch of jerky, and I used seasonings provided with the gun in another. Both were good. I believe it just depends upon your preferences.

When using the meat marinades given above, cut back on the amount of liquid listed when using the gun. Since you will be mixing the spices and other ingredients right in with the ground meat, the drier it is the better and quicker it will dry.

**Drying the jerky**

As I mentioned, I've made a lot of good jerky by hanging strips of meat from an old oven rack I suspended above the woodstove. This general method does a first-rate job and is preferred by many people. Naturally, if you do not have a food dryer or do not live in a climate with sufficiently low humidity, this will be a really good method to try.



*Using the jerky gun to lay out strips of beef on a rack to go in the author's dehydrator*

When drying your jerky, first dry it for an hour at about 160 to 180 degrees F. It is important, though, not to get the meat too hot. After that first hour, adjust the heat source itself, or the distance of the meat from the heat source, so that it runs from about 140 to 160 degrees F. Remember, you do not want to cook it. Keep an eye on it to test it for readiness.

The key is to heat the meat slowly enough to dry it without overcooking. If you heat too fast, the outside gets crusty while the inside is not dry enough. But you need to heat the meat quickly enough to get the moist meat out of the danger zone of infestation by bacteria (40 degrees to 140 degrees F is the danger zone) as quickly as possible.

You can test your jerky to see when it has become dry enough by just breaking a piece of it. Take a piece from the dryer or rack and allow it to cool. Then just break the piece in two. It should not break cleanly, that is, snap in two. Rather it should bend and then sort of splinter and break, much as a green stick might. Give it another few hours after that. Remember, though, that overdrying is preferred to underdrying. With the latter, any retained moisture could allow bacterial growth and spoilage.

When the jerky is sufficiently dried, remove it from the heat. If there are beads of oil present, pat the strips dry with a paper towel. I then store the jerky in large plastic zip bags and put them in the freezer. That is not essential, but it adds storage life to the finished product. At least be sure to keep the jerky in a sealed container. Dried jerky takes up moisture readily. Even if you dry jerky enough to prevent growth of microorganisms, over time the meat could reabsorb enough moisture to allow microorganisms to grow again.

Making jerky is a practical method for preserving meat. Once you try making your own jerky, those small overpriced jerky strips found in the convenience store will seem much less appealing. Δ



# The final act of self-reliance — caring for your own dead

By Marcella Shaffer

**D**eath and dying are part of the natural cycle of life, the inevitable ending to any and all living things. As practitioners of self-reliant living, we try to be as self-sufficient and independent as possible, yet few of us plan for a death or even consider caring for our own dead.

Not everyone finds the idea of caring for their own dead acceptable. Some will not want nor be able to cope with a funeral without an undertaker. Most who chose to, however, find it to be a highly personal and intensely loving experience, the final act of caring and dedication. Caring for your own dead is a labor of love.

In the early days of America, home funerals were the norm. Most communities had a group of women who traveled to the home when a death occurred to help with the “laying out of the dead.” Some religious and ethnic groups have maintained their traditional practice of caring for their own dead. It has only been in the last century that what once occurred at home has been moved to a funeral home and the preparations performed by a funeral director.

An acquaintance in Idaho wrote me about caring for his wife after her passing. Preparing her for burial and the final disposition became “a treasured memory,” he wrote, “unlike some deaths which are only a blur later.” He continued to say that the personal involvement fulfilled emotional needs and helped him accept the reality of his loss.

In addition to therapeutic reasons, conventional burials and funerals can be very expensive. For most families, a funeral is the third most expensive



transaction ever made. Only buying a house or vehicle costs more.

The decision to care for your own dead can be influenced by the wishes of the dying, the emotional needs of friends and family, and available practical possibilities. Some families choose to perform all the care themselves, while others seek the services of professionals for some aspects. It is a decision which should be carefully researched and thoroughly discussed beforehand. Laws vary from state to state as well as with local ordinances. If you are considering caring for your own dead, research the laws for your area before the death has occurred, then follow the regulations carefully.

## Home burial

Home burial is legal in most states, with the exception of local zoning ordinances. If your home is in a rural area, home burial is usually possible as long as certain conditions are met: depth of the grave, distance from water sources, permits obtained, etc. You also have the right to make the casket yourself, as opposed to buying one from a funeral home, even if you utilize the services of a funeral home. A plain pine box, lovingly crafted by

hand, is as beautiful as the one purchased from a funeral home costing thousands of dollars. A body will decompose naturally, regardless of the type (or cost) of the casket.

Another consideration with home burial is the potential for ownership of the property to change and complications which might arise from this. In some states a burial site offers a permanent easement to the property, which could affect the land value. There is also the possibility that the new owners may not tend the site as you would like.

If cremation is your choice, you can make these arrangements yourself without the services of a funeral director. Permits to transport the body to the crematory, or other certificates, are usually required, but in most cases you may do the transport yourself. Most crematories require the body to be in a combustible box or casket for the cremation process, not in excess of 36 inches wide and 30 inches high. There are very few states with restrictions on the disposition of cremains.

## Embalming

Some states do not require embalming as long as certain conditions are met: disposition within a specified number of hours, permits acquired, death was not caused by a particular disease, etc. Again, check your local laws. In some cases, as when the burial must be delayed several days or if an autopsy was performed, embalming may be appropriate. If so, this does not prevent you from handling the other arrangements yourself.

## Other considerations

A death certificate is required in all states after a death. It usually must be filed before any other permits are granted or before final disposition. If you choose not to use the services of a funeral director, it is your responsibility to be certain the death certificate is filled out properly and filed appropriately. Medical authorities fill out only the portion of the certificate dealing

with medical information and cause of death. You must fill out the remainder. Use only black ink and print legibly or use a typewriter. Complete each item without alterations or using "white out." If you do not know the answer to a question, for example veteran status, answer "unknown." Check with the local registrar if you have any questions on filling out the death certificate. Any error or omission can prohibit disposition of the body.

Permits are required before transporting a body and sometimes before burial at home. Never move a body without the required permit or medical/legal permission. Most states require a death certificate or death report for fetal death (miscarriages); however, many require it only if the death occurred after the 20th week of pregnancy.

If the death occurs in a care facility, the staff will usually make arrangements for the death certificate to be issued. Advising personnel of your intentions to care for the deceased, before the fact, will be helpful and avoid misunderstandings and possible complications. Many care facilities are reluctant to release a body directly to a family without the services of a funeral director.

### Necessary information

When caring for a body, there are basics which must be considered. If the death occurs at home, keeping the body as cool as possible will slow the decomposition process. Turn off the heat in the room where the body is located, turn on an air conditioner, etc. Placing bags of ice under and around the body will help also. Depending on the weather, a body will usually maintain for 24 hours if kept cool.

After death, body fluids are sometimes discharged through the body openings. Absorbent material should be placed under the body. Some parts of the body may swell and become discolored. Discoloration is caused by the blood settling to the lowest points. Usually the upper portions of the body

will appear pale and waxy with the lower portions appearing dark purple or severely bruised.

Within a few hours after death, the muscles will begin to stiffen. This is called rigor mortis. If you choose to dress the body before disposition, it should be done before rigor mortis occurs. The eyelids and lips may be sealed shut with a drop of Super Glue. In early days, a coin was placed on the eyelids to hold them closed until the body had stiffened.

Traditionally, the body was washed with a solution of alum and water. This reportedly helped retard decomposition. The body was dressed and placed in a coffin lined with a clean sheet. In one home funeral, a quilt made by the deceased was used—a lovely symbolic gesture.

If you live in an area where caring for your own dead is not common,

then you should be prepared for hesitancy and perhaps resistance from those normally involved in the process. But if you know the law and what you are doing, this can be overcome.

Check your local library for the book "Caring for the Dead: Your Final Act of Love," by Lisa Carlson. This will help you know what permits are required, where to get them, and how and when to file them. It also provides information on legal issues for each particular state. Δ

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# Our old icehouse — one of our most valuable buildings

By Marjorie Burris

When we bought our old homestead in the Bradshaw Mountains in Central Arizona, it had several outbuildings scattered about the property, all badly in need of repairs. We tore down most of the dilapidated old buildings, but when we came to the little log structure built about 50 feet behind and to one side of our old log house, we had to pause. Although the door had been torn off its hinges, the floor was rotted out, the bottom logs were rotting, and all the chinking had fallen out, this old building had character. But why was it built so near the house, and why was it built like a small room instead of a garage?

City people that we were, we finally figured out it must have been used for food storage in some manner, and when we began poking about in the rubble of the rotted floor, we found a pair of big, metal, old-fashioned ice tongs. Our questions were answered. This was an old icehouse.

Later, when we became acquainted with the family who had bought the property from the original homesteaders, we learned how the little house had been used. And although we don't use the icehouse exactly the way those early owners did, it is as valuable to us today as it was to those who lived here a hundred years ago.

Built of hand-hewn logs 10 inches thick, the icehouse is roughly 8 feet by 10 feet on the outside. The front of the building is 7½ feet tall; the back of the

house is 4½ feet tall making a steeply sloped roof from front to back. The original roof had been made of hand-made wood shakes, but some later owner had replaced the shakes with a corrugated steel roof. The inside of the house was lined with sheet metal on the ceiling and walls when we bought the property. Because the logs were so



*The author's icehouse showing the outside and the inside doors as well as the S-hook holding ice tongs on the outside door*

thick, there was nothing used as insulation in the space between the wooden and metal walls, but the space between the sheet metal ceiling and the steel roof was packed tightly with hundreds of dried corn shucks.

The floor joists, as well as the bottom logs of the walls, were laid directly on the ground. There was no foundation. The logs and the floor were made of ponderosa pine. The choice of building material, the way the house was built, and the way it had been used were all contributors to the excessive rotting of the floor and lower logs.

Even so, the old building stands firmly in place after a hundred years. About 10 years ago, we noticed that the 90 foot tall pine tree about 25 feet behind the icehouse was dying and leaning toward the building. We decided we had better cut down the tree before the wind blew it over onto the building. Although the logger cut a deep notch in the direction he wanted the tree to fall, the tree twisted at the last moment and fell directly over the icehouse.

We thought that was the end of the building, but it bounced up about a foot into the air and settled down snug against the ground exactly as it had been before. The only damage we could see then, and can find even today after all those years, was a slight dent in the roof. Even the door fit as tightly as before. We had to laugh. So much for foundations, decay resistant building materials, and careful attention to repairs.

We have not replaced the bottom logs of the walls, but when we replaced the floor we put the joists in exactly as they had been originally. Then we put sheet metal over the flooring, making the house fully lined with metal, and rodent proof. There was no drain in the bottom of the original floor. We were told that the flooring had been laid down with space between the boards so that the water from the melting ice simply seeped through the cracks. We don't put ice directly on the floor, so we had no cause to worry about water standing underneath the building.

When we tore off the old broken door, we replaced it with a door made of milled boards instead of half-round logs like they used in the original door. We knew this cut down on the



insulating quality of the door, so we made a screen door-like frame to fit on the inside of the wooden door, and lined that with cardboard for more insulation. This makes two doors to open when we want to go inside the icehouse, but it is very effective for insulation.

## How the old timers used the icehouse

We know that from the time the icehouse was built sometime in the early 1930s, the people who lived here did indeed cut ice out of the pond and stack it on the floor of the icehouse. They told us they raked up bags of pine needles in the dry months of the fall before it started to snow, then spread the dry needles over the ice for insulation which kept the ice from melting quickly. Depending on the weather, they could keep the inside of the house cool enough to safely store fresh meat as well as milk products and vegetables for some time well into the first of the summer months.

The ice couldn't have been very thick slabs, however, because our pond does not freeze more than four or five inches deep even in our coldest weather. It rarely gets down to zero degrees Fahrenheit here, and when it does dip that low it doesn't stay there long enough to make thick ice.

In the summer months after the ice had completely melted, the house still stayed cool enough to keep vegetables and apples fresh. Our days get quite warm here in the summertime, maybe up to 85 or 90 degrees, but nights rarely stay warm. Most summer nights we need a blanket or two to keep comfortable. The old-timers would open the icehouse door on the cooler summer nights and let it air out, letting out the warmer air and letting in the cool night air to keep the building at a relatively cool temperature of about 50 to 60 degrees.

In addition to the icehouse, those early homesteaders had another clever way to keep foods cool. Outside the

north facing kitchen window they built a frame of a box set up on stilts the height of the window and up tight against the window. The box had a bottom but no sides or top. They covered the sides and top with screen wire, then with burlap, and set a bucket of water with a small hole in the bottom over the top of the box so that water could drip constantly onto the burlap, keeping it wet all the time. The evaporating water kept the food in the box several degrees cooler than the outside air. You could reach through the window to set your food inside the box. I used their box a few summers before we lived fulltime on the homestead when we would come up for short periods of time to work on the place. We had to replace the screen wire with stronger wire. The raccoons found out they could break through screen wire and raid the box.

## The icehouse today

We do not cut ice from the pond. Instead we collect snow in five-gallon buckets and set them on the floor. Snow is easier to collect than ice is to cut and haul. And we have much more snow than we have ice. When we know it is going to snow, we will often set the buckets out in an open place and let Mother Nature fill them at least partly full. Then we can dip snow into the buckets to fill them the rest of the way. After the snow melts, the water will stay cool for a long time. If I want the snow to melt more slowly, I will set the buckets inside cardboard boxes on the floor of the house. When the water gets too warm we can empty it outside where it will not do more damage to the floor and walls of the icehouse.

Also, when my big chest freezer that I had when we lived in the city konked out, we took out the motor and moved the freezer inside the icehouse. The combination of the insulation in the freezer cabinet and the insulation of the icehouse makes for an effective cooler even in the hottest of months. I keep a high-low thermometer in the

freezer and can tell at a glance exactly how hot or cold it has been. It is always cool enough to keep vegetables and fruits for long periods of time. If the weather turns extremely hot, I can buy a block of ice and keep it in a bucket on the floor to aid in cooling the icehouse.

In the fall when we pick bushels of apples in our orchard, we will pour the freezer full of apples and have fresh apples almost until next harvest time. They aren't as crisp as when they were first picked, but they are still very good. I always sort out a few of the biggest and nicest apples. I wrap each one individually in newspaper and store them in an apple box with holes for ventilation in the sides of the box, then set the box on a shelf in the icehouse. At Christmas time we can make lovely gifts with our home grown apples. Finally, we make cider from the last of the apples before they spoil. By then, the apples have mellowed enough that the cider is sweet as well as tangy.

When we butchered a beef, we aged it in the icehouse. We didn't butcher until sometime late in November when cold weather had set in and after the first snow. By keeping buckets of snow setting under the sides of beef, we maintained a rather constant temperature of between 34 and 38 degrees—just right for aging meat. Husband put up a heavy rod made of two inch metal water pipe just under the ceiling. He made S hooks out of re-bar with a sharp point on one end of the hooks. We stuck the sharp point through a side of beef and hung the hook on the pipe. But we did not try to keep the meat all winter like the early homesteaders did. After aging for about two weeks, we cut up the meat and wrapped it in freezer wrap and took it to our son's house in Phoenix for him to keep in his freezer. The meat was delicious.

Potatoes, carrots, cabbage, and in fact almost all my garden vegetables, keep well in the icehouse. However, I don't put winter squash there because

it likes a warmer temperature than I keep in the outbuilding. I do ripen green tomatoes in the icehouse though. I wrap the tomatoes like I do my choice apples and store them the same way. I rotate the tomatoes fairly often and watch them rather closely. They ripen and taste much better than store-bought greenhouse tomatoes, but no tomato tastes as good as it does right off the vine. One year, after a bumper crop of tomatoes, we had the last of our stored tomatoes for Christmas dinner. Right now, I have three big net bags full of lemons picked off our son's tree and hung in the icehouse. They will keep well for several months. I'd like for them to keep until lemonade time, but don't know if they will or not. I may have to squeeze them and freeze the juice later this spring.

## Building an icehouse

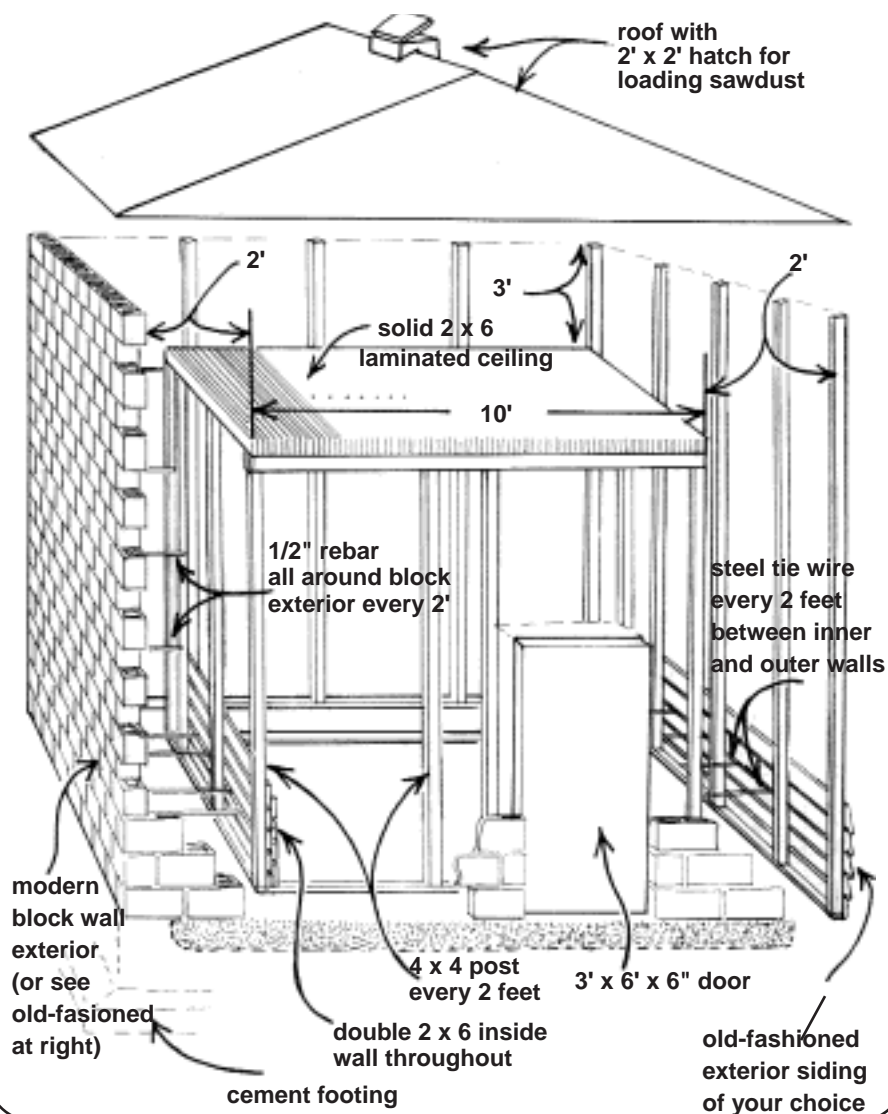
We have a friend who recently built an icehouse out of modern day materials. He used milled lumber and made a little shed-like building about the same size as our icehouse, but the roof isn't as sloping. He put the icehouse up on a concrete block foundation. He lined that building, ceiling, and floor with slab styrofoam insulation, then covered the styrofoam with more lumber. His icehouse is essentially an envelope stuffed with styrofoam.

Without ice or snow stored in it, it stays at a fairly constant temperature of about 50 degrees all the time. He keeps mostly garden produce in his icehouse, but he told us when he wanted to make the building cold enough to keep meat or milk products he would buy some blocks of ice and store them in picnic chests on the floor. He would leave the lids of the chests standing open. He said the ice melted very slowly and the whole building would become as cold as a walk-in refrigerator. Modern day materials—same principle. Better built, but not nearly as charming. Δ

## A modern-day icehouse

We got letters from several readers about icehouses, and among the best was one from H.L. Baggett of Tennessee Ridge, TN. His drawing below is not meant to be used as a blueprint, but as a suggestion for building a more modern icehouse than the one Marjorie Burris found on her property.

Bagget's modern icehouse is 10' X 10' built on a 16' X 16' gravel bed filled a bit higher than the surrounding ground. The icehouse itself should be on a small rise on the ground, on the north side of a barn or house tall enough to cast shade during the day, especially from 11 a.m. to sunset. Note the 2 feet of sawdust insulation on the sides of the inner room and the 3 feet above the ceiling. The drawing depicts a block wall outer wall at the left, or you can use the old-fashioned wood siding shown at the right. Only one door is shown but obviously you'd have an inner and outer door (tightly sealed against the outside) just like Marjorie's icehouse. Also note the roof hatch (sealed against the rain) for putting in the sawdust. Rebar and cement reinforces the block, and steel ties bind the outer wall to the inner wall. The gravel floor and the gravel under the sawdust walls are, of course, for drainage, because you'll have an ice company deliver about 3 tons of ice in 100-200 pound blocks. Separate the blocks with 6 inches of sawdust. Lots of variations you can do to this structure, but this is the basic modern icehouse. Δ



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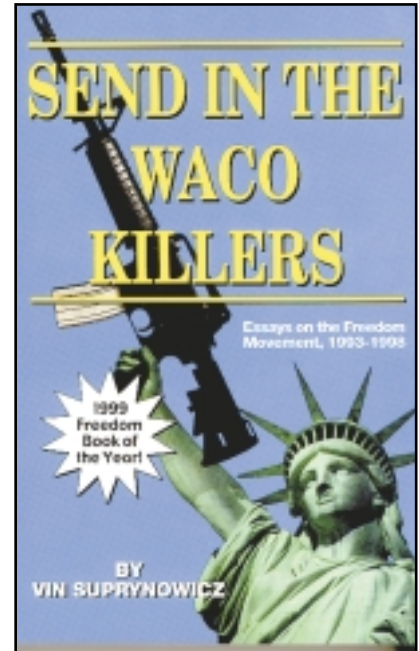
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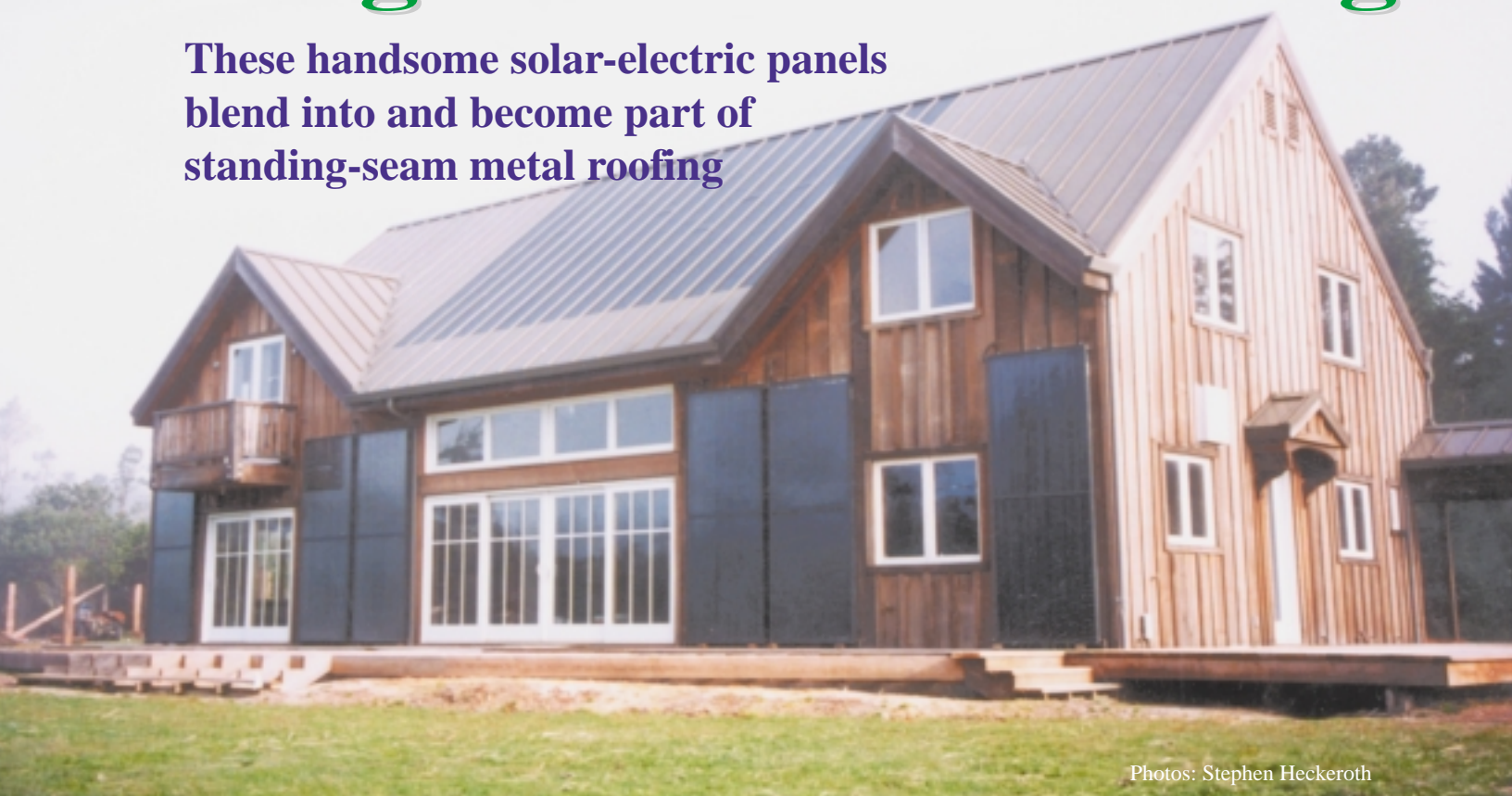
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# Integrated PV/roofing

These handsome solar-electric panels blend into and become part of standing-seam metal roofing



Photos: Stephen Heckerroth

The McMillan house uses both integrated PV/roofing and solar-heated, radiant-floor heating.

## *An interview with Stephen Heckerroth*

*By Michael Hackleman*

**A**fter pouring the foundation, framing the house, and adding a roof, how would you like it if your house was all ready to generate its own electricity? No solar modules and no roof racks to add? This is the promise of integrated PV (solar-electric)/roofing. It is cost-competitive for new home construction and retrofits to existing homes.

Stephen Heckerroth is a solar designer who has constructed innovative systems in homes and buildings to make use of passive solar energy in heating, cooling, and electricity production. I interviewed Stephen on integrated PV/roofing as demonstrated in the McMillan home.

**MH:** There have been longstanding challenges with using photovoltaic (PV) modules on rooftops to generate electricity from sunlight for homes (**Sidebar A**). A major one has been the add-on look to most of the installations. Architects, homeowners, and



Stephen Heckerroth

corporations are understandably reluctant to accept the impact of the framework and modules in an array on a building's aesthetics. You've installed Uni-Solar's integrated PV roofing in 13 projects in the past year. Will you describe how the roofing and PV material is integrated?

**Stephen:** The roof of the McMillan home was ideally oriented and pitched to use Uni-Solar solar-electric modules. Uni-Solar's technology is based around conventional standing-seam metal roofing which is available in a wide range of colors and lengths, with all the necessary trim. In this application, the flexible thin-film amorphous laminants are bonded to the 16-inch wide sheeting. There are two module sizes, reflected in two lengths: 9 feet 4 inches or 18 feet. The 9-foot, 4-inch laminants are rated

## A: Fitting crystalline solar-electric hardware to rooftops

By Michael Hackleman

Rooftops are a natural site for solar-electric generation because ground-level arrays are exposed to theft and vandalism. As well, solar-electric modules on a roof intercept the sun's rays, reducing heat gain to the building for the area covered. Still, there are at least five challenges to their effective use: module size, orientation, temperature, weatherability, and competition.

**Module size.** Standard solar modules aren't easily disguised. If the roof isn't designed to complement their look, the solar panels really stand out. The situation worsens as the size (wattage) of the array increases. There is definitely an add-on or experimental look to these installations.

**Orientation.** Solar modules need to face the sun to generate power. When fitted to existing homes, the modules generally suffer when mounted to rooftops that are not orientated to true south or at an optimum pitch for fixed modules. Finally, the output of a module is severely impacted by even partial shading of one solar cell, limiting installation to roof areas that remain unshaded through the major part of the day. The result is some odd-looking support framework to align and pitch the panels for maximum daily production and minimal shading.

**Temperature.** Rooftops generate high-temperatures in the summer sun, reducing the voltage of many types of solar modules and, often, power output. Flush-mounted solar modules compound the problem, lacking adequate cooling. Again, with smaller (shallow) roof pitches, there is insufficient convective airflow to strip heat away from the modules.

**Weatherability.** Rooftops do a good job considering the beating they get from the sun, wind, rain, snow, sleet, and hail. Fortunately, solar panels have a good history of weatherability, too. The earliest applications for solar modules were in hostile environments and extreme weather sites. Their reliability is such that most of the electronic equipment mounted on remote mountain tops or in marine installations now uses solar modules instead of fueled-generator technology. The overall weatherability and toughness of solar panels makes them ideal as a roofing substitute.

**Competition.** Roofers install roofs. Solar dealers install module arrays. This duplication has kept the cost of adding rooftop solar-electric systems prohibitively high. As well, the prospect of adding solar-generated electricity to a home has remained an unknown entity for homeowners everywhere.

at 12 volts and 64 watts. The 18-foot laminants are rated at 24 volts and 128 watts. The owner/builder or contractor installs as many Uni-Solar modules as are needed to satisfy the owner's electric needs, then uses regular standing-seam metal roofing to finish off the job.

**MH:** Tell me more about the metal roofing.

**Stephen:** Standing-seam metal roofing is a pan with edges. It comes in architectural and structural grades. Architectural grade has a 3/4-inch lip and a separate batten. Use this if it will be laid down over plywood or other decking. Structural grade has a 1.5 inch lip and has an integral batten, so it is stiffer and easier and faster to install. It will bridge a 3-foot gap in a roof's framework.

**MH:** How is the metal roofing secured to the roof?

**Stephen:** A clip slips over the lip of architectural grade roofing and is screwed into sheeting over the roof joists. The next section of roofing obscures the screws of the previous

section when its tab is folded over and a cap or batten is added. The structural grade of metal roofing also uses a clip that is slipped over the edge and screwed to the roof (sheeting or joists). However, the next section utilizes an integrated cap that slips down over the other edge and secures the joint.

By the way, standing-seam metal roofing is not new. It's a system that goes back hundreds of years. Many of the cathedrals in Europe have standing-seam roofs. They have stood the test of time.

**MH:** Is the product ready-to-go when it arrives at the building site?

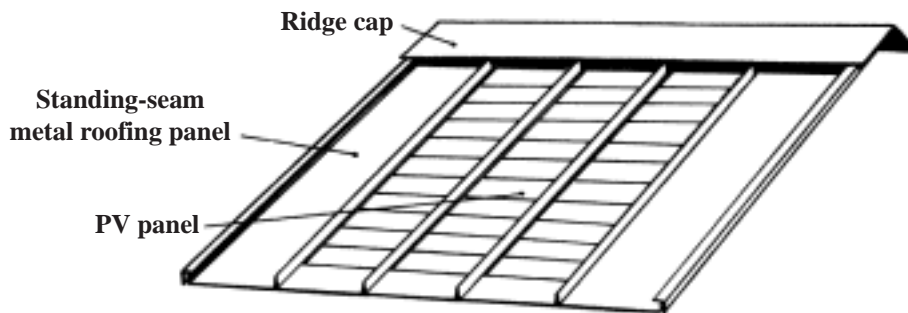
**Stephen:** To date, Uni-Solar laminants have all been factory-bonded. In the future, there will be a choice of factory-bonded or a new version of the product called peel-and-stick. Thus, you have the option of having the laminants shipped directly to the site, where they can be installed directly to standing-seam metal roofing already in place or on the ground. Overall, it's best to bond the laminant

to the metal roofing sections on the ground. You unroll the laminant along the metal roofing, align it, and use a roller to evenly press it down on the roofing as you peel off the protective layer on the back. Peel-and-stick. The roller removes air bubbles and ensures complete bonding.

Factory-bonded modules provide an owner/builder with the laminant already bonded to standing-seam metal roofing. An assembly plant in Mexico receives the pans and laminants from the USA, bonds the laminant to the roofing under controlled conditions, and ships the finished PV/roofing modules to the building site in rigid crates.

**MH:** Do you have any preferences to working with the laminants or the factory-bonded modules?

**Stephen:** It's situational. With a large order of factory-bonded laminants, you need a fork lift at the work site to pick the 2,000-pound crate off the shipping truck. It's a large truck, too. It may not be able to get to some sites. Shipping for that size of an



order from Mexico is \$1,300. Uni-Solar is re-designing its shipping crates to be lighter.

An 18-foot section of standing-seam metal roofing weighs 20 pounds. Buying it locally and applying the laminant, which is itself fairly lightweight and compact to ship, is less expensive. On the other hand, the factory-bonded material is ready to go. If the south-facing portion of the roof is the right length, it goes up fast. In either case, if you use architectural standing-seam roofing, you must take extra care not to damage the fragile pans. Structural standing-seam is easier to work with.

**MH:** Since this PV material is a product of amorphous PV technology, how does it compare or contrast with modules made of poly-crystalline or single-crystal solar cells? I once toured the Arco Solar (now Siemens) manufacturing facility in Camarillo, CA. In 1990, most of the plant was dedicated to the production of single-crystal cells, but one large room had equipment producing modules from amorphous technology. I learned that regular amorphous PV modules were made from thin coats of active material that is sprayed onto glass in a very controlled environment. I know that the efficiency of amorphous PV is only about 6-7% compared with 10-12% for single-crystal.

**Stephen:** Amorphous PV is thin-film technology. Uni-Solar uses a continuous roll-to-roll process with stainless steel foil as the primary substrate. This makes the final product flexible enough to roll tightly, compacting into an 8-inch diameter roll.

The active layer of solar material is only microns thick, compared with many thousands of an inch thick for single-crystal cells. It's also triple-junction. This means there are three different layers of material, each designed to convert overlapping portions of the frequency spectrum of sunlight that contain energy. The combined output results in more electricity than a single-junction would yield.

It is true that the efficiency of amorphous PV is 6-7%, so it is less efficient than single-crystal PV at 10-12%. However, Uni-Solar prices for amorphous PV are based on performance per purchased watt, not area. This makes them directly competitive with single-crystal PV module prices in dollars per watt. Today, that's about \$5-6 per watt, including the racks for modules. Efficiency is an issue in module-type arrays mounted to racks, where you would need more of the amorphous PV modules to achieve the designed wattage than required with single-crystal PV modules for the same area. Collector area is less of an issue with rooftops. For example, the McMillan solar array intercepts about 406 square feet of sunshine in a space that's roughly 23 feet wide and 18 feet high, yet this represents a relatively small portion of the total roof area.

Integrated standing-seam metal PV roofing eliminates both the cost and labor of installing the structural support for PV modules. It also eliminates the cost of the roofing material itself, tile or shingles. For the section of roof the array occupies, it *is* the roof.

**MH:** What was the final system makeup for the McMillan house?

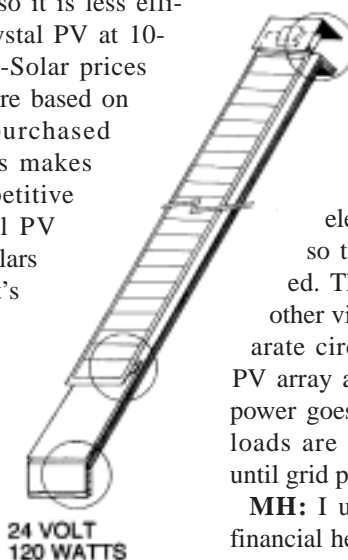
**Stephen:** We used seventeen 18-foot long laminants in the roof. At 128 watts each, this is 2,135 watts of solar-generated electricity at 24-volts DC. This is fed through a controller, a Trace C40, into a battery bank comprised of eight L-16 lead-acid, deep-cycle batteries. Each battery is rated 6 volts and 350Ah (amp-hours). These are wired to produce a 24-volt battery pack of 700 Ah capacity. The battery pack is connected to an inverter, a Trace 4024, which is rated to produce up to 4kW (4,000 watts) of electricity at 120V, 60-cycle AC.

**MH:** Anything special about the system?

**Stephen:** Utility-supplied electricity is available onsite, so the system is grid-connected. The refrigerator, lights, and other vital loads are set up on separate circuits wired to run off the PV array and battery bank. If utility power goes down, only non-essential loads are affected. These can wait until grid power is restored.

**MH:** I understand there is some financial help available for homeowners that install PV in a grid-connected home.

**Stephen:** Yes. In California, where the McMillan house is located, the state and federal programs cut the price of a PV system in half last year. The federal program is over but the California Energy Commission still offers a \$3/watt rebate or up to one-half the system cost for installations on property served by a utility. Many other states have similar programs to







Left: A Uni-Solar module is lifted to the roof and installed.



Below: Module wires are routed under the roof cap.

encourage the installation of renewable, non-polluting energy systems. Five years ago, the McMillan home was the first use of Uni-Solar PV roofing on a private residence.

**MH:** One thing I really like is the way the integrated PV roofing disappears into the roof.

**Stephen:** It's more of a chameleon than you might think. Standing-seam metal roofing comes in a variety of colors, i.e., gray, blue, green. When any of these colors are used around an array and the battens are applied between the array segments, the solar panels take on the color of the roofing. With a green roof, the array reflects dark gray-green. The array reflects gray with a gray roof and reflects blue with a blue roof. Altogether, it adds to the aesthetics of the building.

**MH:** How long does it take to install the Uni-Solar modules?

**Stephen:** It recently took about 2½ hours to install a 4kW (4,000 watt) array. This involved three people installing 30 segments of factory-bonded, structural standing-seam pans on a roof designed for the standard 128-watt modules. So, five minutes per section. I'm experienced at it, but the time usually improves with each segment installed.

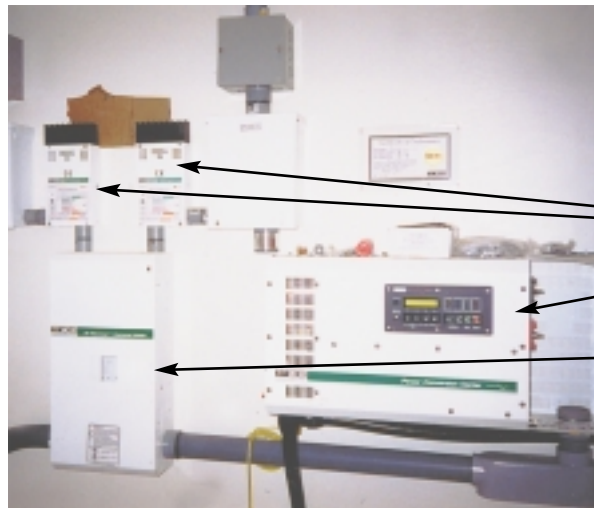
**MH:** Will you approximate the cost?

**Stephen:** It figures to about \$5/watt for the site-applied, peel-and-stick laminant or \$6/watt for factory-bonded. The difference is the current shipping cost (less with peel-and-stick) and the cost of the metal roofing (not supplied with peel-and-stick). At \$5

Right: Grounding strips are soldered to the modules.



Left: A typical power center includes:  
Solar charge controllers  
Inverter/Charger  
DC disconnect



Below: Most battery packs use deep-cycle, lead-acid batteries.

per watt, the 12V, 64-watt modules are approximately \$320 each and the 24V, 128-watt modules are \$640. At \$6 per watt, the cost is \$384 and \$768, respectively.

The big difference is the cost savings of Uni-Solar modules because they don't require the roof racks to support the modules. This saves about \$2 per watt. Uni-Solar offers a 20-year replacement warranty. With any luck, the laminants and the roof will last 40-50 years. Contrast that with the roof under a crystalline-based array.



When it needs replacement, the cost of labor to remove and re-install both the PV array and roof can total to more than the original installation.

**MH:** Have you been able to verify the ratings that Uni-Solar claims for its amorphous PV? And, how long is

*Other installations  
by Stephen Heckeroth  
using integrated PV/roofing.*



Above and left: A 5kW array on a new home outside Blain, ID.

Below: A 2kW shop roof in Mendocino, CA



Left: A 3kW garage roof in Little River, CA.

Below: A co-housing project in Oakland, CA, with a 6.5kW array.



Above: Heckeroth's latest project: a 3.6kW charging station for electric vehicles.

Right: Pam Chang's Berkeley home was re-roofed with a 2.4kW array.



*All photos: Stephen Heckeroth*



the payback for the energy used in manufacturing?

**Stephen:** I have verified the output of many of the arrays I've installed. Watt for watt, Uni-Solar has matched, even outperformed, single-crystal and poly-crystalline modules at a number of solar "shoot-outs" during energy events across the US and Canada recently. These are bonafide technical and performance tests with all the manufacturers represented. Each brand of module is exposed to the same sky, sun, loads, heat, dust, and clouds as every other brand.

The manufacturing process for amorphous PV consumes less energy and produces less waste byproducts than single-crystal PV production. Where it takes five years for a single-crystal PV module to pay back the energy it took to manufacture it, amorphous PV has a payback of six months.

**MH:** How does amorphous PV performance compare with that of crystalline PV in day-to-day operation? I know that amorphous PV is not as sensitive to temperature as crystalline PV. When I worked on the Solar Eagle project a few years back, our design had to allow for a big voltage drop, about 2.2 millivolts per degree centigrade per cell. With a panel made of twenty 432-cell strings of solar cells, the Solar Eagle's array output would drop more than 30 volts when it stopped and just sat in the Australian sun.

**Stephen:** Amorphous is less affected by temperature. A single-crystal solar cell is several thousands of an inch thick. It accumulates heat and drops in voltage. Amorphous PV is only several microns thick. No thermal mass. As well, there's a bypass diode across each section of an amorphous module, minimizing the drag-down effect that occurs with any partial shading. Uni-Solar modules have demonstrated good performance even when installed on east and west-facing rooftops. I know, I've done it. The

modules' non-reflective outer coating captures sunlight that is reflected off standard solar modules because of the incident angle. Amorphous PV output is generally higher in light overcast, shaded, or cloudy conditions than single-crystal PV.

**MH:** What advice can you give owner/builders who might be interested in applying this technology?

**Stephen:** Obviously, you can't have dormers, vents, or skylights coming up through the array. If added to a building under construction, the array should be sited for optimum exposure to sunlight and to avoid any plumbing, stove, and daylighting fixtures in this section. In a retrofit, site the array away from these protrusions or re-route them. The Uni-Solar modules can be arranged as one group, several small groups, or alternated with conventional metal roofing sections. The

electrical terminations can be at either end of the modules. These are fed through a watertight opening beneath the ridge cap or connections are made in the soffit behind the fascia. Wiring connections are made in the attic below the roof decking.

Altogether, Uni-Solar's modules make it easy to add a solar-electric capacity to a rooftop in a cost-efficient way.

(Stephen Heckerth, Homestead Enterprises, P. O. Box 410, Albion, CA 95410. Phone/Fax: 707-937-0338; e-mail: [steve@renewables.com](mailto:steve@renewables.com). Website: [www.renewables.com](http://www.renewables.com))

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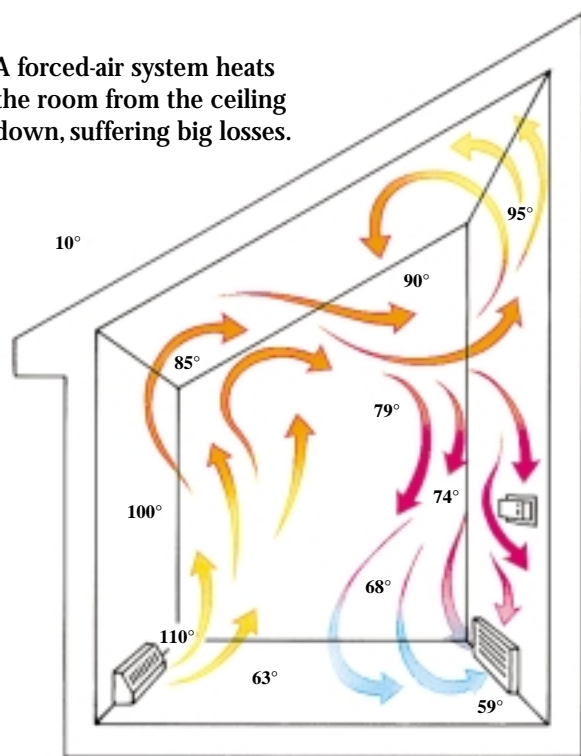
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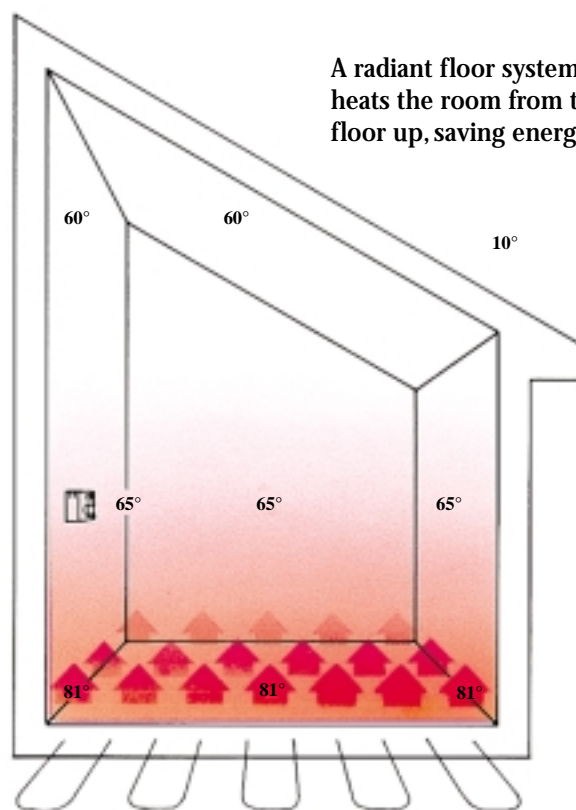
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A forced-air system heats the room from the ceiling down, suffering big losses.



A radiant floor system heats the room from the floor up, saving energy.



All graphics courtesy of Wirsbo USA

## Radiant floor heating

Alternative to forced-air heating is solar-powered, too

*An interview with Stephen Heckeroth*

**By Michael Hackleman**

**H**ydronic, or radiant floor heating is a method of heating a home, shop, or other building with the heat concentrated in the floor. It works by embedding special tubing in a concrete foundation or in a thin concrete mixture on top of a wood-framed floor. Heated water (or a food-grade antifreeze mixture) flows through this tubing, warming the thermal mass of the concrete.

Conventional forced-air systems, wood stoves, or other heating methods produce uneven heat, with the highest air temperatures near the ceilings. Hydronic heating puts the heat in the floor under your feet, gently

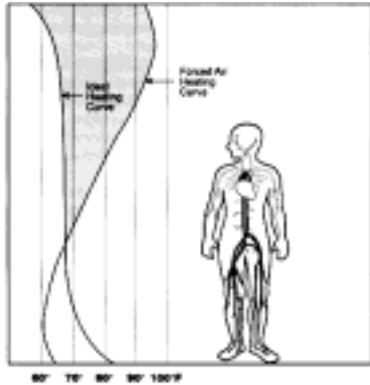
warming a room or a complete structure. This results in similar heating levels with superior comfort without wasting energy and money in monthly fuel bills. The warm water circulated through the tubing in a radiant floor may come from solar collectors, water heaters, demand water heaters, wood stoves, or heat pumps.

I asked Stephen Heckeroth to describe the technology, design issues, and construction and installation techniques related to hydronic heating in general, and heating radiant floors with solar collectors specifically.

**MH:** I first heard of running heated water through tubing in the floor a few decades ago. I think I heard about

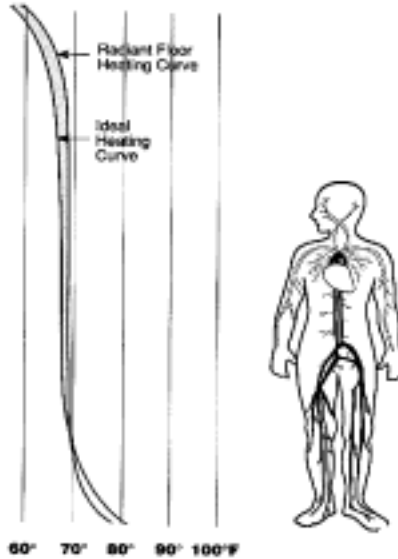
the ones that didn't work. Copper tubing that leaked or corroded. Water that froze and cracked the concrete. What's the situation today? What kind of tubing have you used?

**Stephen:** The technology, materials, and techniques have come a long way in the past decades. I use PEX tubing from Wirsbo. It is specifically designed to withstand the rigors of being embedded in concrete and exposed to water at high or low temperatures. It's available in a variety of diameters —  $\frac{3}{8}$ -inch,  $\frac{1}{2}$ -inch,  $\frac{5}{8}$ -inch,  $\frac{3}{4}$ -inch and 1-inch. The  $\frac{5}{8}$ -inch diameter tubing is popular because it offers a good balance between cost and pressure drop. The  $\frac{3}{4}$ -inch and 1-inch tubing are relatively expensive.



**Above: Forced-air heating versus the ideal warming curve for a person.**

**Right: Radiant floor heating is a good match for human comfort.**



largest distance recommended by the manufacturer for 5/8-inch tubing.

The tubing is laid out in an exaggerated S-pattern, with many variations. It may be as tight as six inches on center (distance apart) or up to 1½ feet apart. A 12-inch on center pattern

is common. The zones should be placed wherever there is foot traffic. Position tubing in front of the toilet, near the tub, and in front of the sink in the bathroom. Use the same strategy for the stove, the kitchen sink, and around the dining table. If you're working from a detailed plan, avoid areas like under cabinets or in closets. Increase the spacing of the tubing to 1½ feet apart in areas that are less traveled. The average size of a zone is about 250-400 sq. ft.

Wirsbo has created a manual (CDAM, 185 pages, \$5 from Wirsbo) that lays out additional patterns that address specific issues or preferences. The manual is extremely useful for understanding the hardware, issues, layouts, options, and methods of heating from virtually any energy source in any climate. In Western Europe, 50% of all new construction uses radiant floor heating systems.

The 3/8-inch and 1/2-inch offer too much resistance, which means more energy consumption to pump the liquid through the pipe. The 5/8-inch tubing is the minimum size needed for thermosiphon. The tubing comes in 300-foot and 1000-foot rolls.

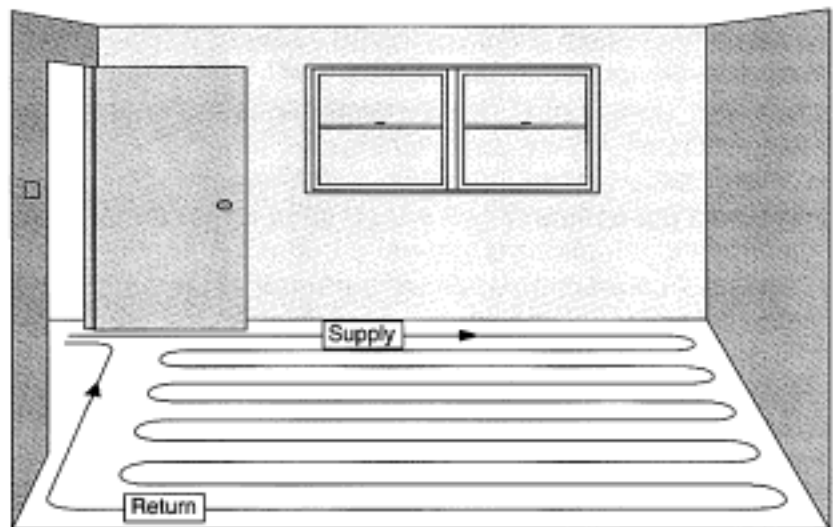
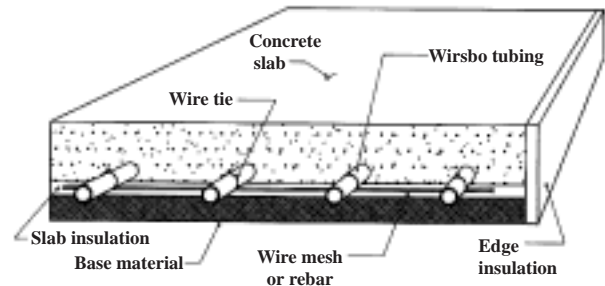
**MH:** We should explain that thermosiphon is a natural flow of water. It is a result of water being heated and allowed to rise convectively as part of a circulation plan in a closed-loop system. For example, water heated in a solar collector will naturally want to rise, effectively both pushing and pulling at cooler water in a circulation pattern. It's a low-tech way to move heat from a collector to storage and use.

Stephen, will you describe the layout pattern for the tubing?

**Stephen:** The PEX tubing is laid in patterns called zones in the pad area to be poured with concrete. A zone might be one room. A larger room might need two zones. These zones terminate in a header pipe that is connected to the source of heated fluid. The length of the zone determines the diameter of the tubing. A small zone of 3/8-inch tubing will need the same pump effort as 5/8-inch tubing of a longer length. Since there is resistance in any tubing, 280 feet is the

**Right: The layout of radiant floor tubing in the slab.**

**Below: A typical layout for radiant heat tubing in the floor of a room.**





**The McMillan foundation is inlaid with insulation and tubing and checked for leaks prior to pouring the slab.**

**MH:** Is there any difference in strategy with a system that will depend on solar versus one that is dependent on propane or wood heat?

**Stephen:** Generally, yes. With solar heating, you're counting on the concrete to act as thermal mass. Slow to heat, slow to cool. With propane heating, the mass isn't really necessary. The thinner slab, maybe as little as 2 inches thick on an existing floor, will heat faster than a big slab but it won't hold the heat long.

**MH:** Is this garden-variety concrete you're talking about?

**Stephen:** Yes and no. Regular concrete works for thick slabs (4 inches plus) and solar-assisted heating. For thin slabs, use Gypcrete and Flowcrete. They're like concrete but not as hard. Using them doesn't result in a finished floor. You must finish the floor with tile, linoleum, or some other cover.

**MH:** Radiant-floor heating seems a perfect application for solar heating. In your experience, is this true?

**Stephen:** If you're investing in a concrete foundation and slab, it makes sense to have it work for you in another way, as thermal mass. A thin layer of insulation under a concrete slab will serve to keep the ground from acting as a heat sink. At the same time, the ground serves to help regulate the slab temperature because any extreme will be tempered by the earth's relatively constant temperature.

For solar heating, you will want a 4-6 inch thick slab. It will take a long time to change the temperature of that much thermal mass and its earth connection. It will tend to be cool in summer and vertically-mounted solar collectors will keep it warm in winter.

**MH:** Can you give me a ballpark figure for cost of the Wirsbo tubing?

**Stephen:** Retail, a 1000-foot roll of ½-inch tubing is about 70 cents a foot. It's about 80 cents a foot for 5/8-inch tubing. The tubing comes with or without an oxygen barrier. I prefer the non-barrier because it is less expensive and I'm careful not to use fittings that will oxidize. A system designed to use solar-heated water that circulates by thermosiphon is susceptible to blockage by air bubbles. It's hard to avoid them where the tubing lies so flat or may have high spots. Bubbles in the water accumulate in the smallest high spots, finally blocking the flow. A small in-line centrifugal pump, 1/20th of a HP in rating, can be used for purging. It will circulate water through the tubing fast enough to dislodge an air bubble. The purge pump only comes on when the system stagnates and the collectors overheat. When circulation is restored, the pump shuts off.



How do you know when a bubble blocks a thermosiphon flow? Install temperature sensors at various points in the system and connect them to a differential control. Use the kind of sensor that fits in a tee off the plumbing and accepts a probe from a digital meter. When the difference in temperature between two points, i.e., at the top of the collector and at some point in the concrete, reaches a preset value, it will run the purge pump until the thermosiphon flow is restored.

**MH:** In one hydronic heating installation I saw ball-cock valves on each tube that led away from the manifold to a zone. Presumably, this gave the owner control of the individual zones, which room was heated, which was not. How well do these work in a solar-heated system?

**Stephen:** I don't use zones in a solar-heated system. There may be many loops but the whole floor is treated as one zone. The system is always on. With vertically-mounted collectors, the floor is heated by the sun through three seasons and cooled to earth temperature in the summer. The thermal mass is a huge thermal flywheel. You dump heat into it in the winter and take it out in summer.

**MH:** Does this system also handle domestic hot water for showers, dishwasher, and laundry?

**Stephen:** Solar panels for a radiant-floor heating system are angled to intercept the rays of the winter sun, which sits 20-35 degrees above the southern horizon at noon. Domestic hot water usage must be angled to optimize heat gain year-round, so the collector must be pointed toward a mid-point, roughly 45-60 degrees above the horizon in the continental USA. Of course, these collectors circulate this water through a storage tank for later use. In the McMillan house, additional collectors were added at the west end of the building and tilted to utilize summer sun for domestic hot water.

## Thermosiphoning tips

1. Use thermosiphon only in areas where freezing temperatures are rare.
2. Cold pipe from bottom of tank to bottom of heat source should slope down so as not to trap air.
3. Use a tee off the tank drain as the cold pipe returning to collector so all the tank water is heated. (Avoid using the standard cold water inlet in water heaters as part of a thermosiphon loop.)
4. Hot pipe should slope up from top of heat source to  $\frac{1}{2}$  to  $\frac{3}{4}$  up the side of the tank to allow room for heat and air bubbles to rise in tank.
5. Locate an air-release valve *and* an expansion tank at the highest point in the system.
6. All pipes should be insulated.
7. Avoid the use of L's and reducers as much as possible.
8. If a heat source is added to back up the collectors, the sensor to control it should be located near the top of the tank.
9. Use timers or other sensors to ensure that backup heating cannot operate until the sun has had sufficient time to heat the water.

**MH:** What other plumbing is needed for the radiant floor system?

**Stephen:** I've already mentioned the in-line pump which is used primarily for purging the system of air bubbles. It must be centrifugal or the water will not flow through it during thermosiphon. An air-bleeder valve is needed, as is an expansion tank and purge valves. This is standard equipment.

**MH:** Will you describe the requirements of the insulation under a concrete slab that will act as thermal mass?

**Stephen:** The insulation works only as a thermal break. It shouldn't have a very high R-value because we want the slab to act as a heat sink in summer. I used foil-faced bubble wrap material which is made specifically for under-slab use. It doubles as a thermal break and radiant barrier. And it's inexpensive. Rigid foam, like foil-faced technifoam or blueboard, also works. Around here, the ground under a slab remains at a constant 58 degrees F. Further north, the ground temperature is colder and more insulation is required. Further south, little or no insulation is required. Carlsbad Caverns stays at a constant 70 degrees F. while the surface temperature outside varies between zero and 115 degrees F.

**MH:** Can you describe the site preparation for pouring the foundation for a radiant floor?

**Stephen:** The overall depth of the "floor" is about 8 inches thick. The process?

1. Cover the excavation with two inches of dry sand. The ground will tend to be damp so it must be dried up, and then covered evenly with sand.

2. Lay in one inch of foam or  $\frac{1}{4}$ -inch bubble wrap. Don't scrimp; it's cheap.

3. Spread dry sand over the insulation to hold the insulation in place and to keep bubbles from rising up through the poured concrete and spoiling the finish.

4. Add the wire mesh. I use 6-6-10-10 wire. This is #10 wire in both directions, 6 inches on center. Bending back the corners will tend to flatten the wire perfectly.

5. Lay out the pattern of radiant tubing and tie it to the mesh. Run the tubing from each zone up into the manifold. The manifold is a pipe header,  $\frac{3}{4}$ -inch to 1-inch in diameter and made of brass, with tees to accept the tubing.

6. Pour the concrete. This should be 4-6 inches deep.

**MH:** Will you describe the radiant floor system of the McMillan house?

**Stephen:** The McMillan house has a total of eight loops. The house is open plan, so there are four loops in the great room (kitchen, dining area, living room), two in a family/guest room, and one each for the two upstairs bathrooms. The design called for direct solar gain on the south-facing side, solar thermosiphon to a back-up propane tank on the east end, and direct thermosiphon with a purge pump on the west end. Propane is the backup heating source.

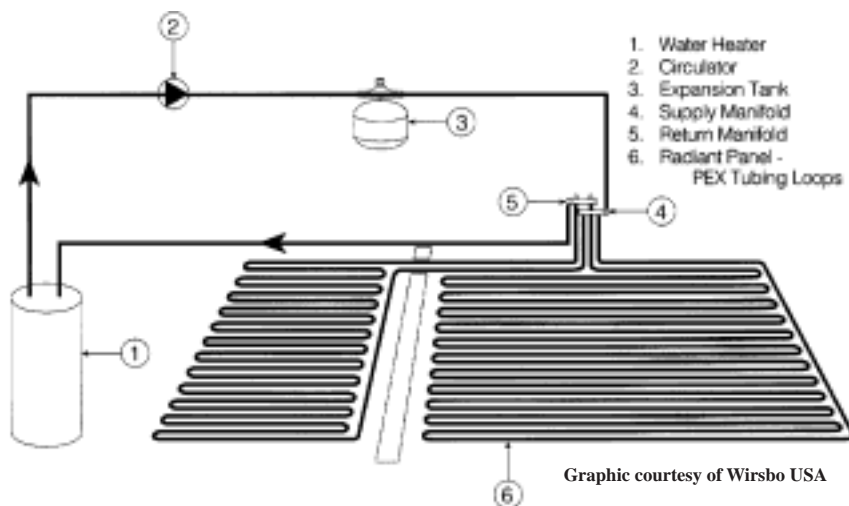
A direct-vent, 80-gallon propane water tank is used on the east end with a simple timer. The timer won't heat water for the floor until afternoon, giving solar energy a chance to heat the system. If it hasn't, the timer engages the fan on the propane water tank which, in the unit I use, will permit the heater to switch on. A small pump circulates water through a heat-exchanger in the tank and then through the radiant floor tubing.

I like to minimize controls in systems because they don't last, and the system performs erratically or fails. I will use differential temperature sensors. When the floor is cooler than the water in the tank, the pump turns on. This pump motor draws 80-watts.

**MH:** We haven't talked about solar-thermal panels yet.

**Stephen:** The solar-water-heating collectors in this installation are mounted vertically against the south-facing outside wall. This maximizes the winter heat gain and impedes any significant heating effect in summer. There are many brands available, new and used.

The panels in the McMillan house came used from Triple A Solar in New Mexico. They have 1-inch diameter headers and 1/2-inch risers in a 10-foot by 4-foot, bronze-iodized aluminum case, 5 inches thick. The riser tubes and fins are black-chromed copper to capture and channel the heat converted from sunlight. The only plumbing requirement is to use only similar metals in all parts to avoid



**A radiant floor system using a water heater as an energy source**

premature corrosion. The collector's glazing is tempered glass, with a roughened surface to minimize reflection.

**MH:** I understand there are quite a few used solar water-heating modules out there. When tax rebates and write-off legislation spurred a boom in the solar water-heating industry a few decades back, a lot of different companies got involved. Earlier, you mentioned designing a system with few controls. A major failing of the industry years ago was the control system. It was too complicated, too varied, too prone to malfunction. On the other hand, many of the collector designs of that period were solid. It was some other part of the system that failed, not the collector. These systems are still being stripped from buildings or replaced by newer designs.

**Stephen:** Used water-heating collectors are widely available. Used collectors from Triple A Solar were \$150 each. New, these collectors would be over \$500 each. Panels that have been removed from a system may prove to be a good investment. A simple pressure check will find any leaks.

**MH:** Let's talk about freezing climates, solar water-heating modules, and radiant floor heating systems. The danger in any solar water-heating system is that water may freeze in the

collector and burst a pipe. At the least, a mess. Certainly inconvenient. Likely expensive. This is a challenge in solar collectors in systems for domestic water heating. What about solar collectors for radiant floor heating systems?

**Stephen:** There are two ways to approach this problem in cold climates or warm climates that get an occasional freeze. The first uses ordinary tap water and relies upon a thermal-bleed valve, or Dole valve. This valve is designed to start dripping when the water at the valve drops to a preset temperature, either 38°F or 43°F. Moving water freezes at a much lower temperature than water which is stationary. A drip valve acts like a leak in the system, letting water out, bringing in new water warmed from the slab or tank. As it gets colder, the Dole valve drips even more. I've found the Dole valve to be reliable on the northern California coast where freezing temperatures are rare. It needs to be checked and cleaned annually, but it is perfect for a mild climate.

The other technique to avoid freezing the collector is to add polypropylene glycol to the water. This is a food-grade anti-freeze used as a dough extender in the baking industry. It's about \$10 a gallon but you don't need much. A 10% solution will

protect the collectors down to 20-25 degrees F. Use a higher percentage for correspondingly lower temperatures.

**MH:** Stephen, thank you for taking the time to share your experiences with *BHM's* readers. Any closing thoughts?

**Stephen:** Orientation is 80% of solar design. Good orientation means choosing a building site with unobstructed solar access, making maximum use of the south-facing roof and walls, and using a lot of insulation in the north walls and roof. The south-facing roof is the place for solar-electric modules and collectors for domestic hot water.

Most of the window area (7-10% of the building's floor area) should be located on the south-facing walls for daylighting and direct solar gain in winter. The building plan should be designed to accommodate vertically-mounted solar collectors for radiant-floor heating here, too. Add overhangs to thwart solar gain in the summer. The north and west walls should have minimum window area, less than 2% of the floor area for north windows to avoid heat loss and west windows to avoid afternoon overheating. The east wall should have windows of 4-6% of the floor area for early morning warmup.

The ideal building site slopes down to the south, increasing solar exposure and facilitating convection and thermosiphon loops. The north side of the building should be dug into the slope to prevent heat loss and increase the earth connection. In my experience, the owners of a well-designed solar home will pay little or nothing for electricity or heat for the life of the building.

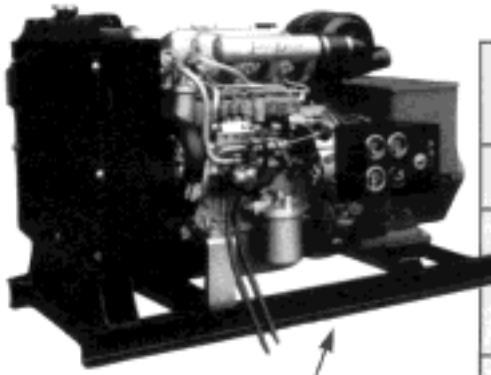
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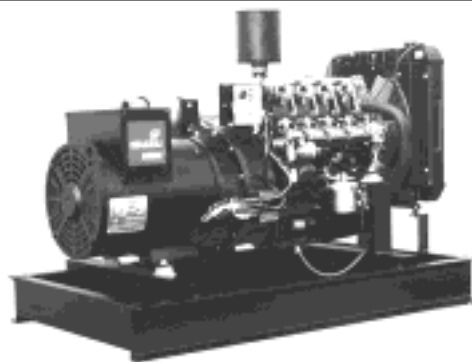
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# Tune up your water system to save energy

By Windy Dankoff

**W**ater well pumping is one of the largest electrical loads for a country home. There are several ways to minimize its energy consumption. Here is a technique that applies to any pressurizing system, utility or PV-powered, especially if it uses an AC pump.

If you look at the performance curve of any centrifugal-type pump (including all AC submersibles and jet pumps), you will see that as the pressure increases past a certain point, the flow drops drastically. This is the pressure at which the pump “slips” and loses efficiency. If this pressure is *below* the cut-out pressure setting of your system, you are wasting a lot of energy.

A pressurized water system uses a pressure switch to control when the pump turns on and when it turns off. In this system, opening the valve of a faucet or flushing a toilet will reduce the water pressure to a point where the pressure switch will turn on the pump. This is the cut-in point. As the pump overtakes the water demand or pressurizes the system after use, it will reach a point where the pressure switch shuts off the pump. This is the cut-out point. Both the cut-in and cut-out points of the switch are adjustable. A cut-out pressure of 50 psi is a typical setting by the manufacturer of a pressure switch.

We had a customer in Colorado whose cut-out pressure on her PV-powered pump was 50 psi. As the pressure got past 40 psi, the flow rate slowed way down. Since there seemed to be more than enough pressure at the faucets, we reduced the cut-out pressure to 36 psi. In doing so, we cut the energy use of the pump nearly in *half*. The owner couldn’t

detect a change in the water delivery but, as it was gardening season, she saw an immediate increase in the amount of energy available from her PV-powered system.

Why do most Americans want more than 35 PSI at their home? The answer is *undersized* plumbing. Most houses in the U.S.A. are plumbed to the legal minimum requirements of the plumbing codes (½-inch and ¾-inch pipe). At the end of a long pipe run, the dynamic pressure may be diminished by 30%.

Is your system affected? If there is a pressure gauge near the pressure switch, you can verify if your pump’s efficiency is poor at the high end. Here’s how. Release some water, just until the pump switches on. Watch the system’s pressure gauge and observe

pipe size (diameter) larger than minimum, for all cold water lines.

3. When using garden hose, ¾-inch hose will cause far less pressure drop than ½-inch or ⅝-inch hose.

When these measures are undertaken, a pressure setting of 25-35 PSI will please anybody.

## Reducing water pressure

Pressure adjustments are made at the pressure switch. If your system does not have a pressure gauge, you need to buy or borrow one for these adjustments. Add it, using a tee, in the proximity of the pressure switch.

On a standard pressure switch, there are two adjustment nuts, with a spring under each one. Turning the nuts counterclockwise will lower the settings. You will see the result by

watching the pressure gauge as you run a pump cycle, that is, as the pump cycles on and off. Here’s the process:

1. Loosen the nut on the longer screw. This will reduce both the cut-in and cut-out pressure.

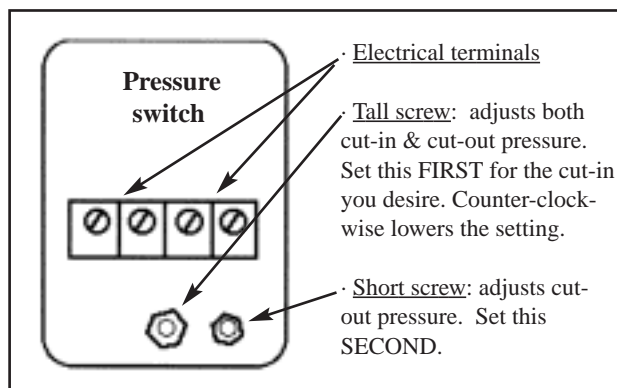
2. Adjust this nut for the cut-in pressure that you desire. Rotate it a specific amount, i.e., a full turn, then observe the pump cycle by opening a

faucet. Repeat this process until you reach the new cut-in pressure, i.e., 24 psi.

3. Adjust the nut on the shorter screw. It adjusts the cut-out point only. Cut-out pressure should be around 1.5 (150%) times the value of the cut-in pressure. For example, for a cut-in pressure of 24 psi, the cut-out pressure should be 35-36 psi.

## Check the pressure tank

Once the pressure is set and everyone is satisfied, reset the pre-charge air in the pressure tank. This will



its rate of rise (this indicates flow rate). Does it rise to a certain point and then slow way down, long before it shuts off? If so, your system needs a pressure adjustment.

What can you do to remedy or avoid this situation?

1. Where a house is already plumbed, observe water delivery at the faucets. If water flow is satisfying without opening faucets all of the way, then a reduction in pressure may be acceptable.

2. Where a house has not yet been plumbed, we recommend using one

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maximize its storage and minimize on/off cycling.

To reset the pre-charge:

1. Note the value of the cut-in pressure.
2. Shut off power to the pump and release water until the pressure gauge drops to zero.
3. Measure the pressure of the tank's air bladder using a tire pressure gauge at the fitting on top of the tank. Set the

air pressure to a value that is 2 to 3 PSI less than the cut-in pressure.

4. Restart the pump.
5. Write down the running time per cycle. Write it on the wall. This way, the performance can be checked later to detect pump wear or other problems.

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# THE SUMMER OF '35

By John Graesch

Sixty five years ago I was living in that part of Seattle, Washington, known as South Park. Few places had as much natural beauty as "The Park" as we knew it. Beautiful lawns and tall shady trees, fruit trees that grew out over the sidewalk where a kid could always get cherries, apples, and peaches in season and none of the owners complained. I remember walking through an alley in another part of town where beautiful Rochester peaches were falling from a tree and rotting there. I picked one up and took a bite out of it and the property owner cursed at me, called me a thief, and chased me down the alley. It bothered me for a long time that a person could let good fruit rot and curse someone for taking a bite of it.

In South Park we had a baseball field that was the envy of many large towns. When the U.S. Navy Fleet was in Seattle for Fleet Week and Potlach Days they brought Sailors by the bus load out to South Park to play baseball all day.

Us kids would go up into the orchards and get large paper bags full of the juicy Gravenstein apples and we'd trade them to the sailors—a bag of apples for a ball, a bat, or a nice leather mitt. Quite a bargain.

When the 1936 school year was over late in May, I got a job delivering groceries for Weatherbee's Grocery.

The "nerve center" of South Park was the Barber Shop on Fourteenth Avenue. It was a two-chair establishment and there were benches for "nexters" and "loafers" both inside and outside. All the news and gossip drifted to this Barber Shop as surely as water flows to a drain.

Many years before, someone had started a "custom cannery" for salmon

on the West Side of the Park. The venture had gone bankrupt and the building sat empty for many years, but now a Mexican fellow had moved in and began to sell chicken tamales, fifteen cents each or two for a quarter.

They were delicious and the price was reasonable enough for those

in the middle of the room, then he put a couple boxes on the dining room table, climbed on the boxes, put his neck in the noose, and kicked the boxes away. His weight pulled the whole lath and plaster ceiling down on top of him and he fell, breaking the table. That was the noise that I had heard.

Needless to say, the happening at the Munson house was the subject of much conjecture up at the Barber Shop in the next few days. There were many suggestions as to how the old fellow might enhance his performance.

Cecil Burdick commented on the chicken tamales and Ned Crossstwaite again brought up the subject of the disappearing sea fowl. No other comments were made so the subject died for lack of a second. Marcus Olmen was heard to reflect that it sure was strange, that having never happened before.

On the sidewalk in front of the Barber Shop there was a fire hydrant. On any holiday morning, Pete Scroggins and his cousin Elmer Short would bring a sack

of potatoes into the Barber Shop early in the morning. They would remove the potatoes from the sack, cut a hole in the bottom of the sack, slip the sack over the fire hydrant, replace the potatoes, then sew the top of the sack back up again.

There were always plenty of visitors on holidays and one of the boys would bet some husky young guy he couldn't lift that sack of potatoes. This was a source of great merriment to all the local fellows who were in on the joke. Some of the old guys laughed so hard they wept. Nowadays people might not see anything funny in a trick like that, but in those days it was quite a thing to see some big, young football



depression days. One odd thing happened though, which at the time didn't elicit much comment: there was a marked decrease in the seagull and fish duck population. But, like I said, no one paid much attention. Tamales became a part of everyone's menu. A few weeks after the tamale business started, I was taking a load of groceries to Munson's house, and as I was carrying them up the front steps I heard this great crash in the house. The front door was open a bit so I peeked inside.

This was one of the real old houses with the 12-foot ceilings, and old man Munson, wishing to depart this earth, had tied a noose to the ceiling fixture

player trying to lift that fire hydrant out of the concrete sidewalk.

Then the Mexican began to sell beef tamales, and they became a big hit. Same price as the chicken tamales and they too were delicious.

Then, one afternoon, just before Labor Day, I was delivering groceries to the Munson house again. Since the happening at the front door I had been taking their groceries in by the back door. I came in through the alley and just as I came alongside Munson's woodshed I was staggered by a huge blast. It took me a few seconds to regain my senses, but when I did I looked in Munson's woodshed. The old man had used a 12-gauge shotgun this time and his troubles were over, all over. A 12-gauge shotgun really makes a mess.

I quit the grocery delivery job then; school was starting in a few days anyhow. A few days after Munson's suicide I was hanging around the Barber

Shop pitching pennies with Nudie Gettel and we heard the fellows talking about Munson and his wish to die. They said he had been gassed badly in France in World War I and a lot of those guys wanted to die.

The talk drifted around to tamales and how good the new pork tamales were, and Ralph Eckdahl said, "You know, I ain't seen nary a seagull around since that Mexican moved in, and now all the gosh-blamed dogs and cats are disappearing."

Spenser Jones said, "Yeah, that sure is funny. I noticed that last week myself."

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Then they all quit talking, and just sat there real quiet and stared at one another until Farber Jenkins said, "You don't suppose?" And everybody just got up and left.

Nowadays there might be a big investigation, but in those days everyone just got up and left.

(John Graesch, 73, is a retired machinist and pipe fitter living in Bandon, OR.) A



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**NORWOOD**



## THE IRREVERENT JOKE PAGE

(Believing it is important for people to be able to laugh at themselves, this is a continuing feature in *Backwoods Home Magazine*. We invite readers to submit any jokes you'd like to share to *BHM*, P.O. Box 712, Gold Beach, OR 97444. There is no payment for jokes used.)

A very large, old building was being torn down in Chicago to make room for a new skyscraper. Due to its proximity to other buildings it could not be imploded and had to be dismantled floor by floor. While working on the 49th floor, two construction workers found a skeleton in a small closet behind the elevator shaft. They decided that they should call the police.

When the police arrived they directed them to the closet and showed them the skeleton fully clothed and standing upright. They said, "This could be Jimmy Hoffa or somebody really important."

Two days went by and the construction workers couldn't stand it any more, they had to know who they had found. They called the police and said, "We are the two guys who found the skeleton in the closet and we want to know if it was Jimmy Hoffa or somebody important."

The police said it wasn't Jimmy Hoffa, but it was somebody kind of important.

"Well, who was it?"

"The 1956 Polish National Hide-and-Seek Champion."

A young boy had just gotten his driving permit. He asked his father, who was a minister, if they could discuss his use of the car.

His father said to him, "I'll make a deal with you. You bring your grades up, study your Bible a little, and get your hair cut, then we will talk about it."

A month later the boy came back and again asked his father if they could discuss his use of the car.

His father said, "Son, I'm real proud of you. You have brought your grades up, you've studied your Bible diligently, but you didn't get your hair cut!"

The young man waited a moment and replied, "You know Dad, I've been thinking about that. You know Samson had long hair, Moses had long hair, Noah had long hair, and even Jesus had long hair."

His father replied, "Yes son, and they walked everywhere they went!"

### BUMPER STICKERS

A clear conscience is usually  
a sign of a bad memory.

I Work Hard Because Millions  
On Welfare Depend on Me!

It IS as BAD as you think,  
and they ARE out to get you.

God must love stupid people,  
He made so many.

I have found, at my age, going bra-less  
pulls all the wrinkles out of my face.

If you must choose between two evils,  
pick the one you've never tried.

An Irishman's been drinking at a pub all night. The bartender finally says that the bar is closing. So the Irishman stands up to leave and falls flat on his face. He tries to stand one more time, same result. He figures he'll crawl outside and get some fresh air and maybe that will sober him up.

Once outside he stands up and falls flat on his face. So he decides to crawl the four blocks to his home and when he arrives at the door, he stands up and falls flat on his face. He crawls through the door into his bedroom.

When he reaches his bed, he tries one more time to stand up. This time he manages to pull himself upright but he quickly falls right into bed and is sound asleep as soon as his head hits the pillow.

He awakens the next morning to his wife standing over him shouting loudly.

"So, you've been out drinking again."

"What makes you say that?" he asks as he puts on an innocent look.

"The pub called; you left your wheelchair there again."

By the time a Marine pulled into a little town, every hotel room was taken. "You've got to have a room somewhere," he pleaded. "Or just a bed, I don't care where."

"Well, I do have a double room with one occupant, a Navy guy," admitted the manager, "and he might be glad to split the cost. But to tell you the truth, he snores so loudly that people in adjoining rooms have complained in the past. I'm not sure it'd be worth it to you."

"No problem," the tired Marine assured him. "I'll take it."

The next morning the Marine came down to breakfast bright-eyed and bushy-tailed.

"How'd you sleep?" asked the manager.

"Never better."

The manager was impressed. "No problem with the other guy snoring, then?"

"Nope, I shut him up in no time," said the Marine.

"How'd you manage that?" asked the manager.

"He was already in bed, snoring away, when I came in the room," the Marine explained. "I went over, gave him a kiss on the cheek, said, 'Good night, beautiful,' and he sat up all night watching me."

An Irishman arrived at J.F.K. Airport and wandered about the terminal with tears streaming down his cheeks. An airline employee asked him if he was already home-sick.

"No," replied the Irishman. "I've lost all me luggage!"

"How'd that happen?"

"The cork fell out," said the Irishman.

A blonde was bragging about her knowledge of state capitals. She proudly says, "Go ahead, ask me, I know all of them."

A friend says, "O.K., what's the capital of Wisconsin?"

The blonde replies, "Oh, that's easy, W."

### Women's revenge jokes

Q. Why is it so hard for women to find men that are sensitive, caring, and good looking?

A. Because those men already have boyfriends.

Q. What are a woman's four favorite animals?

A. A mink in the closet, a Jaguar in the garage, a tiger in the bedroom, and a Jackass to pay for it all.

Q. Why are blonde jokes so short?

A. So men can remember them.

Early one morning, a mother went in to wake up her son. "Wake up, son. It's time to go to school!"

"But why, Mom? I don't want to go."

"Give me two reasons why you don't want to go."

"Well, the kids hate me for one, and the teachers hate me, too!"

"Oh, that's no reason not to go to school. Come on now and get ready."

"Give me two reasons why I should go to school."

"Well, for one, you're 52 years old. And for another, you're the Principal!"

### Irish Prayer

Murphy was staggering home with a pint of booze in his back pocket when he slipped and fell. Struggling to his feet, he felt something wet running down his leg. "Please Lord," he implored, "let it be blood."

**An old man was wondering if his wife had a hearing problem. So one night, he stood behind her while she was sitting in her lounge chair. He spoke softly to her, "Honey, can you hear me?"**

**There was no response.**

**He moved a little closer and said louder, "Honey, can you hear me?"**

**Still, there was no response.**

**Finally he moved right behind her and yelled, "Honey, can you hear me?"**

**She replied, "For the third time, yes!"**

A plane was taking off from Dulles Airport. After it reached a comfortable cruising altitude, the captain made an announcement over the intercom, "Ladies and gentlemen, this is your captain speaking. Welcome to Flight Number 293, nonstop from Dulles to Los Angeles. The weather ahead is good and therefore we should have a smooth and uneventful flight. Now sit back and relax - OH MY GOD!"

Then silence.

Then, the captain came back on the intercom and said, "Ladies and Gentlemen, I am so sorry if I scared you earlier, but while I was talking the flight-attendant brought me a cup of coffee and spilled the hot coffee in my lap. You should see the front of my pants!"

A passenger in Coach said, "That's nothing. He should see the back of mine!"

# Ask Jackie

## Making corn flour, food preservation, pole and container fruit trees, llamas, using roof water ...

(Jackie Clay invites *BHM* readers to submit questions on any facet of low-tech, self-reliant living. Send questions to *BHM*, P.O. Box 712, Gold Beach, OR 97444. E-mail: [jackie@backwoodshome.com](mailto:jackie@backwoodshome.com))

*When I was raising my own children and working, I often made tamales and tortillas. I would buy all I needed.*

*Now I'm disabled and raising some boys again. I can't remember how to make the maza. I only did it a few times. Buying was easier.*

*We now grind our own grain again and try to make all. Please send us some recipes to help. We don't have electricity and even haul our water. Life goes on.*

*The boys I now have had drug problems plus. I took them without any support which is hard. I was working. The great thing is they can't buy drugs when we live so very far from everything. They are turning out much better.*

**Sherry Rhodes  
Ione, WA**

We use quite a bit of masa harina de maize (Spanish for corn flour) here at home, both because it is *tasty* in homemade tortillas and tamales and because it is an economical alternative to wheat or rye flour.

Like most recipes, there are a few variations of corn flour. The one we most often use is dry corn (cow corn, so to speak) boiled in lime water, rinsed, and rubbed with your fingers until all the "skins" are floated away. I use one cup of agricultural lime to one gallon of pure water. Rinse well while rubbing.

I then pat the "hominy," for this is what it would be if you continued boiling it until puffy, dry on an old towel on a cookie sheet, then place in a single layer on a screen to completely dry.

After dried, the naked corn is finely ground with a grain mill or with a mano and metate (grinding stones) in the traditional way. During this grinding, many traditional folks add dried chilies because this makes the most flavorful tamale dough. I do not usually mix chilies with the masa for corn tortillas.

To make tortillas, use 2 cups of masa, mixed with 1 cup of warm water. Mix well. It will seem a little dry, but you can form a ball. Let stand 15 minutes. Divide into 12 balls, rolling with slightly dampened hands. Using wax paper or plastic wrap, press with tortilla press (I got mine from Pinetree Garden Seeds, Box 300, New Gloucester, ME 04260; current price is \$17.98.), or you can use a plate and pie pan as a press. If you make a lot of tortillas, the aluminum press is invaluable...I've used mine for years and it is wonderful.

For tamale dough, I do use chilies in the dry masa, then mix 3 cups of masa with 2 cups of warm water, 1 cup of softened lard or shortening, 1 tsp. salt. Beat until fluffy and spread on pre-soaked cornhusks. Then fill with your favorite tamale filling, roll cornhusk jelly-roll fashion and tie the ends securely with pieces of soaked cornhusk. Steam for 45 minutes.

Masa harina de maize is also sometimes made with whole, very finely



**Jackie Clay**

ground corn (not as good, in my opinion...seems gritty) or even grated fresh corn off the cob (is great, but hard to work with). Quaker makes a ready-ground masa harina if you don't have time to grind.

Don't feel "poor" because you don't have power and haul water. We have power only when we run the generator...usually for my work on the word processor or to wash clothes once a week, and are hauling water from 26 miles away...out of choice. One day, we'll put down a well, but it isn't a real high priority as we have plenty of other places to put our money right now on our new "naked" homestead. (No fences, no livestock barn, no garden, only the land and a home...which we are truly grateful for.)

*I am looking how to do food preservation. Especially how the early pioneers did it. Can you suggest a place to look.*

**Austin**

I've tried about every method of food preservation from those of Native Americans to the most modern. And the two that are truly dependable, producing the best tasting and safest storage foods, are plain old home canning and home dehydrating. Other



more exotic methods, such as salting or packing in lard result in really yucky tasting food that sometimes goes bad, especially the lard-packed meats.

Any good book on food dehydration (which was used by Native Americans, who taught the pioneers) or home canning will get you started. I use both of these methods on a daily basis, making countless "normal" and tasty meals for my family, and feel that we glow in the dark a little less because of it.

*We found Jackie Clay's article "Jackie's Tips" (March/April 2000) very helpful and have changed some of our gardening plans for the coming season.*

*Jackie mentions "pole" and dwarf fruit trees being grown in patio containers, but provides no further information. While we have been able to locate a few (3) varieties of "pole apples" that are intended for containers, we have not had much luck with other fruits.*

*We have scanned the internet and looked at the local library and garden shops for additional information and have not been able to locate very much. Do you or the author have suggestions of where we can find additional information.*

*We are very interested in trying and experimenting with the concept, though the cost is a bit prohibitive without first obtaining some helpful info & hints.*

*What varieties work best? Or will any dwarf tree work? What fruits and varieties will give the best crop when grown in a patio container? Are there some special considerations we need to apply in our selection of trees? Are there special care and pruning needs?*

*We have purchased 160 acres with the nearest "community" being some 47 miles away. We are anxiously working towards making our dream of moving onto the land and becoming self-sufficient a reality, but the move is still several years off.*

*We are currently apartment dwellers and "city-dependent," though we have taken to gardening the area behind the business we live above. We have tried and are adding hanging baskets of strawberries, patio "top-hat" blue berries, and planter boxes of herbs & other edibles. We are experimenting with different strawberries to find which work best in containers with the climate of Utah's Wasatch Front's benches. We are greatly enjoying the experience of and the feeling of being more self-sufficient than we were 4 years ago! And your Backwoods Home Magazine has helped tremendously in creating that feeling!*

*Any help that can be provided on the varieties, places to find, care and pruning, and production quality/quantity of "small fruits" and fruit trees for patio containers would be greatly appreciated!*

**C&E Reynolds**

So far, only apples and crabapples have been created in "pole" form. Stark Brothers has several of these, as well as a container "really dwarf" peach. We have had one of these in Northern Minnesota (in an unheated greenhouse), and it bore ½ bushel of terrific peaches.

We have had luck with container figs as well. You can probably also raise any of the dwarf (not semi-dwarf) fruits, pruning to maintain a short profile, in a large container. You can move 'em with an appliance dolly.

You can also raise grapes in a container; should you move, simply whack 'em off severely and go. The vines will regrow in their new home.

Don't stop with fruits for containers. We've tried indeterminate tomatoes in large pots that reached 12 feet high on strings tied to the eaves, cukes on string nets, string beans planted in boxes and strung up all over the place (decorative as well as productive), Alderman peas the same way climbing six feet tall. As you experiment, you'll gasp at just how much food you can produce as city-dwellers. (You might

shop around for a vacant lot nearby to "rent" for a share of the food you produce. A friend did this and latched onto half an acre at no financial cost and made great friends with an elderly lady, to boot.)

*I greatly enjoyed Jackie Clay's article on "Hard Core Homesteading." But I am wondering how, and where, llamas can fit into the picture. I have heard that llamas are better to raise than cows because they take less space and are also "browsers" like goats and deer. Can llamas be used for milk, like cows? Perhaps Jackie could do some research on the subject and let us know. I would be interested to see an article on the subject.*

**Cara Ebner  
Tucson, AZ**

I truly love llamas, and am a former llama owner. They are neat, friendly, intelligent animals with wonderful wool. They make great sheep guardians and low-impact pack animals. But they are really not much of a dairy animal. First of all, their teats are only about an inch and a half long, making them a "treat" to milk. I've done it for newborn crias (baby llamas), and wouldn't recommend it. Instead, why don't you consider dairy goats. They take much less space and feed than a llama and are low impact animals.

As a hardcore homesteader, an animal must "pay for itself" or be classified as a pet. If you can afford a pet, great. I've got some, myself. (We even had a crippled turkey vulture for three years who insisted on the *best* brand of dog food.) Llamas make great pets, plus you can use the wool if you hand spin and they will carry your burdens on pack trips. But they just don't make the grade, with me, as a dairy animal.

*Love your helpful insights! How about this question. I've got a thousand gallon water tank, and was planning on catching my rain run-off from*

*our trailer, then irrigating my garden with it. I've done this at other places with great success. Then I started to think—could I use this water to wash clothes with? How about dishes or for use in the shower? Our place has an old well that only yields ½ gal per minute. We have to have water hauled to our place at \$40 a month. Got any suggestions?*

**Garnett Rope**

Yep, Garnett, I've got a few ideas. And your situation is similar to ours, right now, as we haul water in a 200 gallon poly tank from Cascade, which is 26 miles from our new Montana homestead. (You might consider buying such a tank if you have a trailer or pickup, as we carry it with us a lot, and whenever we must go to town, we haul back water as an "afterthought" to avoid trips only to get water.)

We, too, will be catching our roof water in barrels to irrigate part of our garden with. We also use our bath water to water our berry bushes, fruit trees, and flower beds to save every bit we can. (You shouldn't use bath water on vegetables.)

Sure you can wash clothes in rain water; it's what most of our grandparents used. Makes 'em really soft, too. As an extra safety precaution, it probably wouldn't be a good idea to wash baby clothes in it, unless it was boiled first.

The shower would be okay too, provided the water was reasonably pure; you might consider a basic in-line filter. And as with the clothes, you might not want your small baby to shower in roof run-off. (But as you know, from toddler on up, those kiddies are exposed to more *E. coli* at your local fast-food playland than they might get from an occasional bird doo-doo on the roof.)

Dishes? I think I'd draw the line there. I'm frugal, but those few gallons of dish water might better come from the well or town, as there are a few organisms

that might harm you should you ingest them, but which most likely would be no problem at all with the other uses.

*Do be sure* your trailer roof is not coated with asbestos roof coating, as some older, repaired trailer roofs are, as you can pick up asbestos particles from run-off water. If it is, you might consider placing another frame roof over it with, say, a metal roof. This could add extra insulation between roofs and give safe catch water for you to use.

I'd consider revamping your well. Many low-producing wells are really not that bad; the pipe may be leaking in the casing, the leathers on the foot valve may be worn out, the well may only need to be deepened a few feet, or the screen on the point may be plugged with debris or minerals. Give serious consideration to this, as a good home well would solve a lot of headaches. Talk to a willing local well person with a creative bent. One I knew forced a gallon of vinegar down a low-producing well pipe with air pressure, then began pumping. In an hour the vinegar ate out the mineral deposit on the screen of the point and the well went from a gallon a minute to ten!

Good luck; water is indeed precious!

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# Summer winds down in the garden

By Alice Brantley Yeager  
(Photos by James O. Yeager)

**D**ays grow shorter, nights become cooler and summer is winding down even while we think about it. With the coming of cooler weather surviving plants in the garden take on new life. The bugs, heat, and humidity battles of the growing season are over. Now it seems everything coasts along until definite signs of autumn are seen in leaves and migrating birds.

It's a nice time of year to enjoy the flavor of tomatoes ripened in the sun without fear of sunscald. Sweet peppers turn red enhancing their flavor and winter squash and pumpkins are coming into their own. It's time to take stock of the pantry to see if there is need to squeeze in a few more jars of home-canned vegetables or fruits. Maybe there's some room left in the freezer, too.

Will the electricity go off? One thing about a pantry, those jars of home



*Late summer deepens both color and flavor in peppers and tomatoes, and while the tomatoes may not be as perfect in appearance as the earlier ones, their enhanced flavor make them delicious for canning or enjoying fresh.*

canned goodness are a lot more reliable, as far as preservation is concerned, than the frozen packages stacked in the freezer. Dehydrated items put away in clean sterilized jars will probably outlast them all.

Those of us who have survived some lean times have a tendency toward frugality. Some of our younger friends are driven up the wall by the thought of gleaning every bit of produce we can find in our gardens toward the end of the season. "Why are you doing this when you have plenty already?"

We remind them of the ant and the grasshopper story and also throw in a few proverbial sayings such as "Waste not, want not" and "Shameful leaving is worse than shameful eating." We hope these bits of wisdom find fertile minds, but often we wonder if we are actually addicted to too much saving. Be that as it may, there's a feeling of security in being able to create nourishing meals from our own supply of

homegrown foods rather than being dependent on the supermarket's array of items, some of which list chemicals we can't define.

We economically-conscious gardeners continue to harvest from our plants despite the side glances of nongardeners, some of whom can't raise dust. End-of-summer tomatoes, as a general rule, will take on a succulent flavor that can only be described as perfect. The fruits may not have the smooth look of the midsummer tomatoes, but the taste they give to salads, as well as cooked dishes, is something to be anticipated. Even the color seems to deepen. Anyone casting away their late summer tomatoes or leaving them to deteriorate on the vine is missing a good thing. Tomatoes don't have to be picture-perfect to be steeped in flavor. When imperfections are removed and the tomatoes made into something using chopped tomatoes, who cares about a few blemishes?



*Don't hesitate to turn end-of-the-season tomatoes into canned tomatoes. We use twice as many canned tomatoes as we do other items.*

## Vegetable soup

At our house, particularly during the coming cold weather, soup is a favorite main dish. With plenty of canned vegetables on hand, there's no limit to what we can concoct to bring on a cozy all's-well-with-the-world feeling. Soup served with hot tea or coffee and some hot corn bread or dilled oyster crackers makes life take a turn for the better. Let the winter winds sigh through the loblollies. Soup's on!

- 1 large beef soup bone with substantial meat left on it
- 3 quarts water
- 2 tsp. salt
- ½ cup brown or white rice
- 6 medium tomatoes, peeled and cut in small pieces
- 1 medium onion, chopped
- 1 large Irish potato, diced
- 2 carrots, diced
- 2 medium sweet peppers, chopped
- 2 cups green beans, snapped
- 2 cups whole kernel corn
- 1 cup celery, diced
- ½ cup fresh herbs (sweet basil, parsley, etc.), chopped
- 1 small hot pepper, minced

In large heavy pot simmer the soup bone in water with salt until meat is easy to remove—probably about 1½ hours. Take the soup bone from pot, let it cool enough to handle and remove the meat from bone. Chop the meat into small pieces and give the bone to Rover.

Put the rest of ingredients including the meat in a pot with the beef broth and bring to a simmer. (You may want to add more water.) Cook until the vegetables are done. This is a basic recipe and other vegetables may be used. Broken pieces of spaghetti or macaroni may be substituted for the rice. Other meats may be used instead of beef. Chicken and turkey make a lighter type of soup.

We often make soup in a 9-quart stainless steel pot. After enjoying a generous helping, we cool the rest, put it in airtight plastic containers, and put them in the freezer. Soup is easy to thaw out in a double boiler for a quick nourishing meal.

When we transplant our tomato plants to the garden in the spring, we always hope the summer will not be so torrid as to make it almost impossible to carry the vines through until fall. We space the plants according to mature size expected. Plants listed as determinate will be relatively compact and bushier than those listed as indeterminate. The determinate ones are easily supported by medium-height tomato cages or stakes. We prefer cages over stakes as it's easy to tuck stray stems into the cages practically eliminating the need for tying-up. The taller indeterminate plants need higher supports. We're lucky to have some tall cages made of reinforcing wire and we also have plenty of bamboo on hand in case we run short of cages.

One of the first work-saving things we do after the plants are set out is to apply a mulch of organic matter—leaves, pine needles, grass clippings (no seeds), etc. This cuts down on weeds popping up, provides a workplace for earthworms, and eliminates erosion or ground-packing by heavy rains. Every little bit helps when we're trying to get past hot, humid summertime.

Throughout the summer, our surplus tomatoes are canned for future use. If we're lucky enough to escape a severe drought wherein temperatures pass the 100 degrees F mark and stay there for days on end, we can count on tomatoes with that special late summer flavor. Deep red and juicy, there's nothing like a slice of one of those toma-

atoes on whole wheat toast along with a favorite drink.

While enjoying a plump ripe tomato, folks don't usually think much about what they are doing for themselves healthwise. It's interesting to know that tomatoes are high in Vitamin A, calcium, and potassium. There are also fair amounts of phosphorus and Vitamin C. If you're trying to watch your weight notice that an average size tomato only has about 20 calories.

Certain varieties of tomatoes will usually produce well during the summer and continue to do so until frost nips the vines. In our garden we can count on Quick Pick, Thessaloniki, Supersteak, and Sweet Million to bear well into chilly weather. Some others will perform well until early summer and then succumb to some type of wilt or blight almost overnight. When this happens, we pull up the affected plants and dispose of them away from the garden. **Diseased plants should never be thrown into the compost pile.**

Another survivor to be savored in our late-season garden is the sweet pepper. Usually frost will find the plants still producing good quality peppers and we make an all-out effort

## Dilled oyster crackers

- 2 12-oz. packages oyster crackers
- 1 cup canola oil or other light vegetable oil
- 2 tsp. dried dill weed
- ½ tsp. garlic powder
- ½ tsp. finely ground cayenne pepper
- 1 1.6-oz. package Ranch Salad dressing, original flavor

Put the oyster crackers in a large mixing bowl. Thoroughly mix the last five ingredients together and pour a bit at a time over the crackers, stirring until the crackers are coated. Let stand covered at least one hour. Store them in an airtight container. They do not need refrigeration and they're good to use with soup, salads, and as snacks.

## Sweet pepper salad

4 medium sweet peppers,  
blocky, cubanelle, or blunt  
type  
4 medium tomatoes, sliced  
2 cups cooked chicken, chopped  
1 small red sweet pepper,  
chopped  
1 small stalk celery, chopped  
1 small onion, minced  
¼ cup mayonnaise  
¼ tsp. dried sweet basil  
¼ tsp. dried dill weed  
salt and pepper to taste

Wash the peppers and remove the stems and seeds. Cut each pepper into four or five lengthwise pieces. On four salad plates, arrange the pepper pieces to extend out from the center in a sunburst pattern. Place slices of tomato between the outer edges of the pepper pieces. Thoroughly mix the rest of ingredients. Divide into four portions and place a mound in the middle of each plate. Garnish with chopped green onions, parsley, black olives—whatever suits your fancy. Serve with crackers, chips, iced drinks, etc. Serves four.

to pick all peppers of usable size the evening before the first freeze is expected. Actually it's a bit of a sad time, as the next morning it's likely that the healthy plants we saw the evening before will be blackened and drooped. That's it for summer's peppers.

Those last peppers of the season are likely to have a number of sweet red peppers among them. Many people

don't realize that green bell peppers, if left alone, will mature into tasty red peppers. If you like the flavor of crisp green peppers, try eating red ones. Maturity enhances their sweet flavor into a real taste treat.

At the beginning of the growing season, we transplant our pepper plants into the garden much the same way as we do the tomato plants. We plant with plenty of compost and space the plants according to mature size expected. Mulching is also done. Each plant has a medium height cage placed over it for stability as it grows. The stems of pepper plants can break under the weight of peppers but this is unlikely if stems can lean against cages.

Sweet peppers are one of our most versatile vegetables and full of vitamins and minerals. They can be used raw or cooked. They come in various sizes and colors: green, red, orange, lime-green, ivory—even purple. Think what these colors with their subtle mixture of flavors can do for a salad. Sliced in pieces lengthwise, they're great to eat with dips.

Peppers can be either a summertime treat or stuffed and baked for a chilly day food. Some peppers are more suited for stuffing than others. As a rule, blocky peppers are better for stuffing as they will stand upright. (See recipes.)

We also dehydrate peppers. This is a space saver and peppers will keep indefinitely. We use an electric dehydrator as southwest Arkansas, due to its heat and humidity, isn't the best

## Stuffed sweet peppers

4 large sweet peppers  
2 cups cooked rice  
1 cup cooked ground beef  
1 medium onion, chopped  
1 small clove garlic, minced  
1 medium carrot, diced  
¼ tsp. dried sweet basil  
¼ tsp. dried thyme  
⅛ tsp. cayenne pepper  
½ tsp. salt (optional)

Select peppers that are blocky in shape and will stand on end without tipping over. Wash the peppers and remove the stems and seeds. Make holes in their tops large enough for easy stuffing. (Any usable pepper pieces may be chopped in with rest of ingredients.)

Combine other items listed and stuff into the peppers. Place in a covered baking dish with a small amount of water and bake in 375 degree F oven for about 45 minutes. Serve topped with your favorite hot gravy or tomato sauce. Serves four.

place to dry vegetables and fruits outside. Peppers are washed (dry off excess moisture) and stems and seeds discarded. The remainder is cut into about inch square pieces and placed on drying trays in the dehydrator. The temperature is set at 125° F, and pieces are removed when they are brittle. Drying time varies with the thickness of the peppers, humidity, etc. The peppers are stored in clean, tightly capped jars until needed. The pieces may either be softened in some warm water for a few minutes or added directly to the soup, sauce, etc., being cooked.

Hot peppers will also be producing until frost and by that time there are plenty of them to can for pepper sauce. Left on the plants until they turn red and dry somewhat, they may be strung on stout thread or string and hung in a dry place to use in any culinary dish calling for a bit of zip. They're especially good to add to a pot of dried beans. Δ

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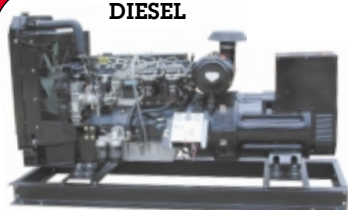
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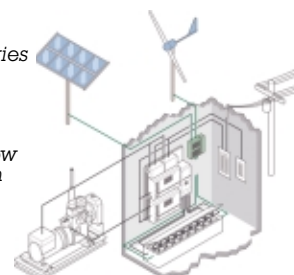
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# CHILI MANIA

**This all-American food came out of Texas  
to conquer the whole culinary world**

**W**henver you discuss peppery issues like religion or politics your emotions and blood pressure are at risk of running high. This is because the conversation is likely doomed to end in dispute. In like manner, when chili lovers gather to debate who makes the best chili con carne, arguments over religion and politics can seem tame. The casual mention of chili can put a glister in the eyes of those around you as they ponder the secret ingredient or magical technique that makes their chili superior to all others. All it takes is for someone to make an innocent statement like, "You should try my new chili recipe, it's the best you've ever tasted." And that euphoric gleam in the eyes of those around him or her is likely to vanish and resurface as the gargoyle, irresistible passion known as Chili Mania.

This Jekyll and Hyde-



sold in the United States from Texas to New York.

like transformation can turn mild-mannered conversations into heated feuds. On occasion, these feuds have erupted into knockdown, drag-out fights. Even references to and definitions of this simple but elegant dish never seem to be casual and without emotion. Chili has been defined as "a dish made of shredded cattle to which powdered chili peppers have been added" and "an incendiary dog food widely eaten in Texas." One Mexican dictionary, not happy with the reference that chili may have Mexican roots, defines the dish as a detestable food with a false Mexican title



Richard Blunt

On the other hand, chili lovers express their feelings in very different terms. Referring to his beloved Texas-style chili, the great musician Harry James once said, "Next to jazz music, there is nothing that lifts the spirit and strengthens the soul more than a good bowl of chili." Will Rogers described his favorite chili as "the bowl of blessedness."

If you ask 10 knowledgeable cooks to define a hollandaise sauce, the universal answer will most often be, "An emulsified sauce consisting of butter, egg yolks, and lemon juice combined with a little water, salt, and cayenne pepper." If you eliminate any of these ingredients, make substitutions, or fail to follow a specific preparation procedure your sauce becomes something else. None of these cooks will argue this point.

But if you ask the same 10 cooks for a definition of chili con carne, the only element they will come close to in agreement is: a spicy stew-like dish with a reddish color. Of course, if there is a green chili lover in the group, there will be dissent.

Why is this? I don't profess to have all of the answers, but in my opinion this is due to the fact that outside of a few broad ingredient guidelines that define color, piquancy, and loose preparation specifications no one seems to know what chili is. Is it a stew, a soup, or a casserole? Con carne means



with meat. If this is true, how can anything vegetarian be called chili?

Over the years I have eaten chili or creations called chili that have been made from a broad range of ingredients including tofu, tuna fish, cheese, and rice. One so-called vegetarian chili contained collard greens, fava beans, and okra. I believe that chili is one of the very few stew-like concoctions that everyone, regardless of experience, can make using these broad and loose guidelines. The lack of clear definition and precise production procedure has made it possible for all of us to be chili experts.

So, in a subjective way we can all look upon our chili creations as being superior to all others. Without these unique characteristics chili would not have several worldwide societies and newspapers devoted solely to the appreciation of its infinite interpretations. If there was only one true chili, there would be no need for chili cook-offs and chili cookbooks. Have you ever heard of, or attended, a hollandaise sauce cook-off? That would be a real snoozer.

## The history of chili

There is a fair amount of scholarly argument over the history of chili. The story has so many twists and tangents that it is almost impossible to sort the facts from the exaggerations, conflicting claims, and downright lies. Some of the most unlikely stories trace chili as far back as the 16th century.

One of these legends states that a young nun from Castile, Spain, suddenly started going into trances that left her body lifeless for days. When she awoke from these trances she claimed that her spirit had been in a far away land where she preached Christianity to the Indians. Sister Mary Agreda is supposedly mysteriously known to some Indians of the southwestern United States as the “lady in blue.” Unsubstantiated claims have been made that she wrote down the first chili recipe for the Indians during one of her mysterious visits. The problem with this fable is the fact that long established cultures, like those of Native American’s, have culinary practices that seldom change

from one generation to another. There is no tangible evidence that chili became part of the Native American diet during that time.

Another more believable notion, based more on historical fact than legend, indicates that the first recognizable chili-type stew was created by Texas adventurers and cowboys during the 1840s. Before heading into the California gold fields or a big cattle round-up, it is said that these hardy, inventive people pounded dried beef, fat, salt, and wild chili

peppers into a pemmican like paste that was easy to carry and relatively shelf stable. This paste, or chili-brick, was then boiled with water while on the trail to make a hearty, hot meal. However, it appears that this “chili pemmican” was not widely accepted in Texas or elsewhere for more than two decades. During my research I was unable to find any evidence of Texas soldiers eating chili during their Civil War campaigns.

It seems as though chili did not really become a popular food in Texas, or anywhere else, until the late 1800s when it became a standard menu item in Texas prisons. Also, the colorful women nicknamed the San Antonio “chili queens” started selling their chili brews from bubbling cauldrons in the downtown plazas, including the Alamo plaza, this in an attempt to make summertime roadkill protein taste better—just kidding.

Prison cooks in Texas and other parts of the Southwest

discovered that the chili pepper, when combined with certain spices and herbs, could work wonders with inferior cuts of meat. In Texas, jailhouse chili was so popular a dish that former inmates, from time to time, wrote to prison systems requesting the recipe, claiming that they could not find a chili as good on the outside.

In San Antonio, Texas, many felt that a night was not complete without a visit to one of the popular chili queens. Every night, around dusk, these picturesque vendors would spice up the night when they set up their crude tables covered with checkerboard-patterned oil skins. Each chili queen also set up a large ornate lamp and dressed gaily to attract the eyes of customers who had been drawn to the



*In San Antonio, Texas, many felt a night was not complete without a visit to one of the popular chili queens.*



plaza by the wonderful chili scent. The chili queens remained a popular attraction in San Antonio until 1943 when government sanitation standards enforced in the town's restaurants were applied to them. Of course, it was impossible for these portable, outside eateries to comply with these rigid standards and they quickly disappeared. Fortunately, by that time, chili was well on its way to becoming one of the most popular dishes in Texas and across the rest of the country as well.

No reflection on chili history, even a brief one such as this, is complete without the mention of some additional milestones that have enhanced the ever-growing love that inventive cooks have for this fundamental yet convoluted food. Many chili cookbooks dismiss commercial chili powder as a stale mystery mix made with questionable ingredients that produces a bad tasting chili. However, one of the reasons that chili became so popular during the 1890s was the invention of the first chili powder seasoning mix. Prior to this, home cooks found that preparing chili peppers for cooking and seasoning purposes was, and still is, an arduous and sometimes painful task.

The invention of chili powder by one of two men living in different parts of Texas opened the Chili Mania door to many home cooks. It is generally agreed among dedicated chili lovers that one or both of these men deserve a place in history close to Alfred Nobel, the inventor of dynamite. If you live in the Fort Worth area of Texas your vote would go to De Witt Clinton Pendery. Pendery arrived in Fort Worth in 1870 and set up a successful grocery store. When the store burned down in 1890 he started selling chili pepper pods and spices for making chili and tamales. To enhance sales for his new business he created a well accepted powdered chili pepper, oregano, cumin seed, and garlic blend that he called "chilo-maline." This powder is still made and sold by a company that bears his name. Folks in the San Antonio area, however, give credit for this invention to William Gebhard of New Braunfels, Texas, now a suburb of San Antonio. Gebhard sold his chili powder blend under the Eagle Brand Chili Powder trademark. This original formula is still used to make this wonderful spice blend, and is also sold by a company that bears his name.

The first gourmet organization dedicated to the love of chili, the Chili Appreciation Society, was founded in 1947. Now called the Chili Appreciation Society International (CASI), it has chapters all over the world. Oh (expletive deleted), I just remembered that I forgot to renew my membership.

Unfortunately, the strict rationing imposed during World War II removed chili con carne from many restaurant and home menus. During the late 1960s two events helped to revive the popularity of chili in this country. The most significant was the first publication of a book written by the

well known historian of the Southwest, chili lover and cook Frank X. Tolbert. It's called [A Bowl of Red](#). Shortly after that book appeared, it became widely publicized that President Lyndon B. Johnson was also a chili lover. The combination of these two happenings fostered a chili popularity explosion.

During the autumn of 1967, Frank Tolbert and his friends contrived a tongue-in-cheek marketing plan to promote his new book. They organized America's first chili cook-off.

This prankish event was held in Terlingua, Texas, a patch of desert with a moon-like geology near the big bend of the Rio Grand River. The contest originally pitted the chief cook of CASI, Wick Fowler, against Dave Chasen, the well known Beverly Hills restaurateur and personal chili chef to Elizabeth Taylor. It is well known that Texans and Californians look on each other's chili formulas with disdain. Unfortunately, Chasen became ill just before the contest and the organizers were forced to find a new opponent. Fortunately for them, H. Allen Smith, a popular humorist from Mt. Kisco, New York, had just written an article for *Holiday Magazine* titled *Nobody Knows More About Chili Than I Do*. The article lambasted Texas-style chili, and it probably would have been totally ignored by Texas chili cooks, but the marketing value of this matchup was too rich to ignore. Wick Fowler, the Texas chili hero, against the Eastern bad-mouth was a contest made in heaven.

After some bantering back and forth between Smith and Tolbert, Smith accepted the challenge and the first annual World Chili Cook-off was on. Even though the event ended in a tie under very bizarre circumstances, it started a national infatuation with the bowl of red that continues to this day.

Every year there are thousands of chili cook-offs in every corner of this country to which enthusiastic chili cooks travel thousands of miles to participate. Chili is a gastronomical wonder-food that has risen from simple beginnings to almost mythical status. It has been the official dish of the state of Texas since 1977 and there is an active contingent of chili lovers lobbying to make chili con carne the official dish of the United States. This is quite an achievement for a food that is one of the least defined of all dishes.

## Can anyone make chili?

I have often said that good chili can be made by anyone, regardless of culinary experience. This does not mean that making chili is simply a matter of mindlessly rummaging through the kitchen gathering an assortment of ingredients and tossing them into a pot with a little liquid and turning on the heat. There are a few simple and easy-to-follow rules, but they are rules that must not be violated—unless, of course, you're into feeding stray dogs, mice, and rats. And I

*...there are three basic types of chili: good, bad, and dog food.*

believe that there are three basic types of chili: good, bad, and dog food.

Good chili is possible when all of the ingredients in the pot agree with each other, that is, every ingredient in the pot serves to compliment all of the others in quality, taste, texture, and aroma.

Bad chili is obviously the opposite. An example of bad chili is adding zucchini squash to the pot, then cooking the chili for two hours, or adding a cup of salt to the pot when all you needed was a teaspoon.

Dog food is just about any canned chili.

Before we move to the recipe section, let's spend a few moments reviewing some chili basics.

## Chili basics

The heart and soul of this wonderful "stew" that we call chili con carne is the chili pepper. For me, the chili pepper is the main attraction. Chili is one of the few foods that provides a stage for the varied and subtle flavors of the capsicum pepper so that it can be put on display for all to recognize and appreciate. When first introduced to chili peppers, the first sensation that the newcomer experiences is the heat caused by the chemical capsaicin. Capsaicin is concentrated in the oil contained in various parts of the pepper. The highest concentration is in the seeds and the veins. But most of the pepper's flavor is concentrated in the pulp, that part of the pepper lying just under the outer skin. These wonderful and varied flavors are, without a doubt, the richness that makes good chili good.

There are over 300 varieties of chili peppers and each has its own unique flavor and heat value. Not all chili peppers are widely used to make chili con carne, but there are a few that the aspiring chili maker must be familiar with.

Another definition for good chili is one that people will eat and enjoy. The types of chili pepper used will be a significant factor in the finished taste and piquancy of any chili. So it is necessary to have a basic knowledge of which chili peppers are hot, which are mild, and what kind of flavor, if any, they will contribute to the finished stew. What follows is a list and description of a few chili peppers often used to make chili. The chili peppers that I talk about here are all purchased and used in dry form. I live in southern New England where the growing season is not long enough for many chili peppers. So the selection of fresh high quality chili peppers is slim for most of the year. When I make chili, I use a variety of dried chili peppers to create the central flavor. Fortunately, there are some specialty shops in my area that carry a good selection of these dried peppers, and most are of high quality. A couple of these stores even take

*One Mexican dictionary, not happy with the reference that chili may have Mexican roots, defines the dish as a detestable food with a false Mexican title sold in the United States from Texas to New York.*

special orders for peppers they don't usually stock. Using these dried peppers, I have developed several custom chili pepper seasonings.

Here is a descriptive list of a few dried chili peppers that I use most often in these seasonings.

**Cascabel:** This is a medium hot Mexican pepper that is almost never found fresh in this country. When dried the pepper is round like a cherry pepper with a translucent skin. It has a dark reddish-brown color and the seeds rattle around inside, hence its name cascabel—or jingle bell. When toasted this pepper develops a rich nutty flavor.

**Chipotal:** Any pepper that is dried by a smoking process can be called a chipotal. However, the jalapeno is most commonly used for chipotals. Jalapenos do not dry well by other methods. Usually only mature jalapenos are selected

to be smoked-dried, making them significantly hotter than the immature green pepper. When used to enhance the flavor of a chili, they impart a wonderful, but not at all subtle, smoky flavor to the stew.

**Ancho:** This is one of the most popular dried peppers used to make chili in this country. When fresh it is called chili poblano. It has a brownish-red to chocolate color and is about 4 inches long and 2½ inches wide. It has a rich chili flavor with a hint of raisin and, because it is a rather mild pepper, it can be used in quantity to add a deep rich flavor to any chili creation.

**Mulato:** The mulato is a close cousin to the ancho. When dried it is difficult to distinguish from an ancho. However, there are distinct differences between the two. Both peppers dry flat and become blackish brown and very wrinkled. Each will show its true identity when soaked. The ancho rehydrates to red, while the mulato retains its chocolate color. The mulatto also has a chocolate-like flavor and is sweeter, richer, and more pungent than the ancho. An old fishing buddy of mine enhanced many of his chili creations by adding two ounces of pureed mulato to the pot about 15 minutes before he removed it from the heat. This gave his stew a wonderful rich flavor with a subtle hint of chocolate. My wife, Tricia, suggests that adding a little bittersweet chocolate to a chili comes close to duplicating this flavor. As strange as this may sound, try it, it works.

**Pasilla:** This is a long, narrow, curved pepper that turns a wrinkled, dark-raisin color when dried. The pasilla has rich, mellow flavor and is slightly hotter than the ancho but with none of its sweetness.

**New Mexico:** The darling pepper of New Mexican chili lovers, it is a light green when young, matures to a medium green, and finally a deep red when left on the bush. In the fall, chili pepper fanatics throughout the Southwest crowd roadside roasting stands to stock their freezers with the new

fall crop. I am most familiar with the dried mature version of this pepper but depending on where you live, it is also available fresh and smoked dried while still green. Its heat range is from medium to hot, depending on the cultivar, and it has a very distinctive flavor. I have more to say about this interesting pepper in the recipe section.

**Chiltepin:** This is a native pepper that grows wild in the lower part of the Southwest and throughout Mexico and it is devilishly hot. Seasoned asbestos mouths love this tiny ovoid-shaped pepper and seldom cook anything without adding a measure of these little fireballs to the recipe. On occasion, I am able to buy a dried cultivated version at a specialty food store in my area. I buy enough to fill a 14-ounce cocktail sauce bottle about two-thirds full. I then fill the bottle with dry sherry and leave it in the refrigerator for a couple of days to stew. I use a couple of teaspoons (a little goes a long way) to jazz up chili, soups, sauces, and anything else that I think needs a little zing. If you can find a seed source, this pepper does well when grown in pots. Unlike many other chili peppers it prefers partially shaded locations.

The first time I tasted this pepper I was in a little restaurant in Mexico. It appeared as a dollop of reddish paste on the side my salad plate. I asked the waiter what it was and what I should do with it. He told me that it was salad seasoning, and I should pour a little oil on my salad and gently mix the seasoning into the salad. Ay Caramba! That is a salad I will never forget. Just be aware, if you are fortunate enough to find some of these peppers, use caution. You must be prepared to take responsibility for your own pain.

As you know there are many other varieties of fresh and dried chili peppers, but most of these, in my opinion, have little to add to a good pot of chili con carne. Oh yes, I know there are many of you who cherish your cayenne, fresno, habanera, scotch bonnet, serrano, and other worthy peppers and may not agree with me. It's your chili and you are the executive chef, so use what you will.

## Choosing a meat

The backbone of good chili is meat. Many purists believe that the only meat for chili is beef. A growing number of cooks, myself included, hold that other meats, such as chicken, lamb, pork, and venison also work well. I have yet to use such meats as buffalo, water buffalo, moose, emu, ostrich, and elk. But if you have special knowledge of cooking game meats, you may find them interesting in your chili pot.

When using beef or any other red meat don't waste money on high-priced steaks, chops, and roasts. Lean cuts of beef

chuck, fresh brisket, bottom round, or round steak are perfect meats for chili. Pork shoulder, Boston butt, or shoulder end pork loin roast are also good chili cuts. All of these cuts should be trimmed of excess fat. Remember that toughness in the meat is not an issue when making chili. After an hour in the pot tough meats that have been properly prepared will become tender.

There are several ways to prepare meat for the chili pot, depending on the type of meat you intend to use. When I use beef and have a lot of energy, I dice the beef into half inch cubes. More frequently I will use beef that has been course ground or, as insiders say, "chili ground." A meat is considered chili ground when it is put through the grinder using a ½ or 1-inch cutting plate. These are the same cutting plates that butchers use when making some varieties of ethnic sausages. Chili ground beef is fast becoming a regular

item in supermarket meat cases. If you don't see it, ask the meat cutter. Often he or she will run a batch through the machine while you wait or take a special order to be processed later. When using pork or chicken I simply dice

it into ½-inch cubes. Your chili deserves only the best quality ingredients, so avoid "on sale" cuts of meat that are often loaded with sinew and excess fat.

## Choosing spices

When it comes to spices and herbs, as I have said so many times before, "The fresher the better." You don't have to use a large variety of flavor enhancers to make a good pot of chili. In fact there are only a few herbs and spices that have enough savor to keep from getting lost in the presence of the almighty chili pepper. Here is a list of several spices and a couple of herbs that will enhance the flavor of any chili.

**Cumin:** The musky, nut-like flavor of white cumin seed is what gives chili its distinctive flavor. The flavor of cumin becomes more pronounced when the whole seed is roasted in a dry skillet or in the oven before it is ground. Chili connoisseurs use this simple roasting technique with many of their spices and herbs.

**Coriander:** Coriander seed is one of the first spices to be used by man. The seeds have a strong, nutty aroma and a sweetish, pungent taste. The word "coriander" is derived from the Greek *koris*, meaning bed bug. This is because the ancient Greeks believed that the leaves and the seeds smelled like that insect. There are almost as many definitions of its flavor and odor as there are interpretations of chili con carne. Its aroma has been likened to orange peel, lemon peel, and a mixture of cumin and caraway. Also, the bed bug thing has never gone away. Like cumin, it is best to buy the whole seed and grind it as needed.

*In Texas, jailhouse chili was so popular a dish that former inmates, from time to time, wrote to prison systems requesting the recipe, claiming that they could not find a chili as good on the outside.*



**Garlic:** Since I have been writing for *Backwoods Home Magazine* I have said a great deal about my affection for this wonderful herb. The only thing left to say about garlic is that it is one of Nature's greatest gifts to the cook. Having plenty of fresh garlic in stock is a must staple for the chili cook's pantry.

**Whole clove:** Clove has a sharp pungent taste and a fragrant aroma. In ancient China etiquette demanded that anyone received by the emperor must have a clove in his or her mouth to sweeten the breath. I believe that a small amount of clove added to a pot of chili enhances the aromatic quality of the stew.

**Allspice:** Allspice is one of the principal ingredients in Jamaican jerk seasoning. It is one of the spiciest and most versatile flavor enhancers on the planet. Allspice is an aromatic spice that was created to be forever wed to the chili pepper. When the whole berry is toasted, ground, and added to a pot of chili, the marvelous fragrance and taste of this stew will forever linger in your memory of good food experiences.

**Oregano:** Many of the folks who profess to know their "chili fixin's" claim that Mexican oregano is a must for seasoning chili. Any other dried herb, according to them, is only dead leaves when used to season chili. Well, in my opinion, this is one of the most whimsical concepts that exists in chili theory. Which variety are they talking about? The Botanical Garden at the National University of Mexico says that there are 13 varieties of oregano growing in that country. It is true that Mexican oregano has a more pronounced flavor than its unrelated counterpart, Greek oregano, but I believe that both of these herbs, if understood and used properly, will complement a good bowl of chili.

The herb that we call Greek or European oregano is a close relative of sweet marjoram. It is quite hardy and will grow in a broad spectrum of weather and soil conditions. Sweet marjoram, on the other hand, thrives only in the area close to the Mediterranean basin. Mexican oregano, or wild marjoram, comes from a different plant family than Greek oregano and is native to Puerto Rico as well as Mexico.

The reasoning that many chili experts use to support the "Mexican oregano only" theory is its strong taste and pungent aroma will not get lost in a stew as spicy as chili. This is true, but I think that limiting this quality to just this one herb is overkill for a couple of reasons. First of all, not all varieties of Greek oregano are created equal. Chefs in southern and western France have discovered that growing oregano in barren soil in sun drenched locations dramatically increases the flavor. What gardener can't effect the same conditions? More important is the fact that many of us would be hard pressed to tell what type of oregano was used in a finished pot of chili. I have discovered that adding a

measure of sweet marjoram to my base chili seasoning, along with the Greek oregano, adds additional character to my chili, and the character of both herbs does not get lost. Having said that, I hope that my membership renewal in CASI is not rejected.

## Fat or no fat

There is no escaping the fact that animal fat imparts more flavor to all foods than vegetable fat. Many of us still hold to the notion that the best chili is made with a lot of fat—usually kidney suet, salt pork, or bacon drippings. I prefer a small amount of rendered, dry cured salt pork to sauté vegetables and meat. However, the older I become, the more concerned I become about clogged arteries, heart attack, and stroke. But I also believe that a chili cooked in the

absence of fat is missing a great deal of flavor. So I allow my chili to cook to completion without skimming. When the chili is done I let it cool in the refrigerator to congeal the fat so I can

easily remove most of it before reheating. Though I suggest using vegetable oil in all of the recipes, you can substitute an equivalent amount of animal fat of your choice.

## Beans—yes or no?

Beans are a natural mate for chili. So isn't rice. Tricia, my wife, prefers to add fresh stewed beans to her chili. I like eating chili with the beans served on the side. The whole family loves rice with chili and both beans and rice provide a pleasant contrast, in both texture and flavor, to any chili. They also help stretch a small amount of meat a long way. If you are going to add beans to your chili while it is cooking, I suggest you use dried beans that have been soaked and slow-cooked according to the directions on the bag. If you don't want to deal with dried beans, buy good quality canned beans and rinse them well before serving. Goya Foods packs a large variety of high quality canned beans. All of these beans have a pleasant taste and a firm texture.

## Alcohol

Alcohol seems to leech the subtle chili pepper flavors from a pot of chili. Before adding any beer, ale, wine, or other liquor to your stew, cook it for a few minutes in a separate pot to vaporize the alcohol.

## Special equipment

All you need is a five-quart or larger pot with a heavy bottom. I use one of my Dutch ovens. Leave the lid in the cabinet. Chili is at its best when slow cooked in an uncovered pot.

So much for the basics. Let's cook some chili.

*Prison cooks in Texas and other parts of the Southwest discovered that the chili pepper, when combined with certain spices and herbs, could work wonders with inferior cuts of meat.*

## Chili seasoning as a concept

In India many dishes are seasoned with Marsala powders. A marsala powder is a blending of spices and herbs usually custom designed for a particular dish. There are five basic marsala powders that I am familiar with. Each of these powders has hundreds of individual interpretations, depending on the flavor the Indian cook is attempting to impart to his or her creation. Marsala powders are formulated to allow the cook to customize a dish with the addition of extra herbs and spices, without compromising the basic character of the dish. Borrowing from this effective blending technique I developed a basic chili seasoning that I use to enhance a wide variety of dishes.

The all-purpose version of this seasoning appears in the Nov./Dec. 1999 issue of *Backwoods Home Magazine*. The following version is formulated just for making chili. Of course, just like any other seasoning mixture, the ingredient selection and amounts are open to individual interpretation. Many serious chili lovers would recoil at using cloves, coriander, and allspice in a chili seasoning. If you are one of these, eliminate these ingredients and substitute whatever. The key to success with this seasoning is using high-quality dried peppers, whole spices, and fresh dried herbs.

In this seasoning I use the well known New Mexican chili, a pepper that has been cultivated in New Mexico for over 300 years. A cattle rancher from Oxnard, California, introduced the seeds to his home state and eventually started a pepper cannery in Anaheim, California. The first cultivar of these original New Mexican seeds was renamed the Anaheim chili. Today many cultivars of this pepper are sold by seed suppliers with names like Anaheim M, Anaheim TMR 23, Big Jim, Colorado, New Mex, and New Mexico No. 9, just to name a few. Dried New Mexican or Anaheim peppers are often used to make the wreaths and ristras that you see in the produce section of your local supermarket. I first fell in love with this chili after eating a side order of fresh green New Mexican peppers that were stuffed with cheese, chopped olives, and minced jalapenos. They had been batter-dipped and deep-fried. The restaurant called these little dandies Fire Crackers. In the Southwest they call them chilies rellenos. This mild chili, in my opinion, has a subtle, rich flavor that is completely different from other chilies and perfectly suited as a flavor enhancer for the recipes that I intend to share with you in this issue. However, most of my chili creations demand heat, so to complement the mild flavor of the New Mexican I have added a fairly hot pepper that has very little flavor of its own, chili De Arbol. I also use this pepper in many Thai recipes when heat is the only complement that is necessary to round off the flavor of a dish. I have further enhanced the chili mixture with the medium-hot, nutty flavor of the Cascabel pepper. Sweet Hungarian paprika is added to enhance the traditional red color of the finished chili. If

these peppers are not to your liking, substitute peppers that are.

Next to chili peppers and cumin, oregano is about the most important flavor enhancer used in chili. As I said, many self-proclaimed chili experts use only Mexican oregano, an herb with a strong dry pungency that is sniffably different from its European counterpart. Since I live in an area where Mexican oregano is a scarce commodity, I use a combination of European oregano (this is the type commonly found on the store shelf) and sweet marjoram to create a flavor that satisfies my taste buds. Once you have prepared and sampled this formula, you can customize it to suit your personal taste. This seasoning will keep for months when stored in the freezer.

### Ingredients:

2 oz. dried New Mexican chilies, seeds and stems removed  
6 dried De Arbol chilies, seeds and stems removed  
6 dried cascabel chilies, seeds and stems removed  
1 Tbsp. whole cumin seed, toasted  
½ Tbsp. whole coriander seed, toasted  
4 whole cloves, toasted  
½ tsp. allspice berries, toasted  
1 Tbsp. dried leaf marjoram  
1 tsp. dried leaf oregano, any variety  
1 Tbsp. sweet Hungarian paprika

### Method:

1. After removing the stems and seeds from the chilies, break them into pieces. Toast them over low heat in a heavy-bottom skillet until they are fragrant, slightly darkened, and somewhat crisp. Do not walk away from this procedure, and stir the peppers frequently while they are on the heat. Transfer the toasted peppers to a heat-resistant dish to cool.

2. Using the same procedure described in the previous step, lightly toast the cumin seed, coriander, whole clove, and allspice berries. Set the spices aside to cool.

3. In a spice mill, coffee grinder, or blender reserved for grinding spices, process the peppers into a fine powder. Repeat this process with the toasted spices.

4. Combine the powdered chilies and spices with the leaf marjoram, oregano, and Hungarian paprika

5. Pack the finished seasoning in an airtight container and keep it stored in the freezer.

## Blunt family chili

This is a recipe I developed to test the integrity of my chili seasoning. With the exception of the chocolate, salsa, and the brown ale, all the ingredients are standard to a basic chili con carne. The salsa was my son Michael's idea. He

was given his own cookbook for Christmas and in less than six months he has developed some strong opinions about recipe construction. As I stated above, adding the chocolate is my wife's idea. The beef stock and ale amounts are approximations. Feel free to play with these two ingredients. The amount of liquid added and the total cooking time will determine the thickness of the finished stew. We think this is a great chili for several reasons. First of all, it won't blow your head off or make your stomach feel like it is under a termite attack. You can eat a whole bowl of this stuff without stopping to cool off. And finally, it has a lot of chili flavor, while the tomato flavor is almost nonexistent. Also, if your taste and texture preferences run along the same lines as does my wife's, please feel free to add beans. Your preferences rule. This recipe serves six to eight.

### Ingredients:

6 Tbsp. peanut oil  
 3 lb. lean ground beef chuck, chili grind  
 1½ lbs. lean pork, cut into thin strips about 1 inch long by ½-inch wide  
 2 medium yellow onions, diced  
 6 garlic cloves, diced fine  
 4 Tbsp. chili seasoning  
 1 16-ounce jar chunky salsa, medium or hot  
 1 14½-oz. can low-fat beef stock  
 1 12-oz. bottle brown ale, precooked to boil off the alcohol  
 1 28-oz. can crushed tomato in puree  
 1 oz. bittersweet chocolate  
 salt and pepper to taste

### Method:

1. Heat two tablespoons of oil in a heavy-bottom skillet or Dutch oven. Add the ground beef and sauté over medium-high heat until the meat loses its pink color and starts to brown. When making chili, I don't feel that browning is an important factor. If you disagree with me, add your beef in small amounts and brown it as you wish. If you brown the meat in small amounts, you will need more oil than I have suggested. Remove the cooked beef and hold it in a suitable size bowl or other container.

2. Heat two tablespoons of oil in the same pot and sauté the pork over medium-high heat until it loses its pink color and is browned to suit your taste. Add the cooked pork to the beef.

3. Heat the remaining two tablespoons of oil and sauté the onions over medium heat until they become translucent and start to brown. If you have the patience to bring your onions to an even light brown color, it will add a pleasant light sweetness to your chili.

4. When the onions are done add the garlic and continue to cook the mixture for about 30 seconds.

5. Add the chili seasoning and continue to cook the mixture for another 30 seconds.

6. Add the salsa, beef stock, pre-cooked ale, and crushed tomato to the pot and heat the mixture to a slow, even simmer. Gently stir in the meat and return the stew to the same slow even simmer. Cook the chili for 1½ to 2 hours.

7. Add the chocolate during the last half hour of cooking. Salt and pepper to taste.

8. If at any time during the cooking the chili seems too dry for your taste, add more liquid of your choice.

I serve this chili with a side of stewed pinto beans or Texmati rice. My wife and daughter often crumble pilot crackers over their chili.

## Howard's chili pinwheels

The first serious "chili head" I ever met was my old fishing buddy, Howard. Howard was a member of an elite group of Cape Cod fishermen that made a living during the summer months fishing the surf and Cape Cod Canal for striped bass, blue fish, and tautog (sometimes called blackfish) and selling them to selected restaurants. Howard also supplemented his income cooking on a per diem basis at a couple of these restaurants. He loved to cook over a campfire, a talent that made him a natural sand dune cook for a group of enterprising market fishermen. These guys followed the tide changes and migrating fish from Scusset and Sagamore Beaches to Race Point Beach, often fishing without rest for 24 hours or more. When it came time for them to eat, the food had to be hot and in sufficient quantity to satisfy several very big appetites. To meet this challenge, Howard developed several campfire specialties.

One of these was a basic chili recipe that he served in a wide variety of ways. To him, chili was more than a favorite food; it was a culinary experience. Unlike many other beach-front cooks, Howard looked upon most canned foods, especially chili, with disdain. He prepared his chili from scratch using the finest ingredients he could buy. He once held up a can of chili and read the label: "This stuff is a foul mixture of mystery meats, caramel color, calcium chloride, dehydrated onion and soy protein, held together with modified food starch." As he lowered the can he added, "When sales are slow the factory changes the label from chili to dog food."

This aversion to canned chili, however, is where Howard's chili purism ended. He developed several interesting ways to prepare and serve his chili. The recipe that follows is, without question, a favorite of all who taste it.

Howard, like me, used a pre-prepared custom chili seasoning in all of his chili recipes. "I don't have the time to mess with chili pods and spices on a windy beach at night," he would say. The following recipe for chili pinwheels is one that Howard usually made after he finished his restaurant shift. He would then store them in the restaurant's freezer



until he needed them. The fishermen would toast them over the hot coals and eat them with a variety of Howard's home-made sauces. His recipe combines a special, easy to prepare chili formula with a flaky biscuit dough. These delicious pinwheels can be served with almost any sauce that you can think of. My recipe review committee (my children Sarah, Jason, and Michael) like them topped with homemade BBQ sauce, but I like a simple brown sauce as well.

### Ingredients:

2 lbs. lean ground beef (80 or 85 percent lean is best, regular grind—don't use the chili grind for this)  
8 oz. onion, diced fine  
3 oz. celery, diced fine  
3 cloves of fresh garlic, diced fine  
2 Tbsp. chili seasoning  
1½ cups canned tomato sauce  
1 Tbsp. masa harina or fine corn meal  
salt and black pepper to taste  
biscuit dough (recipe follows)

### Method:

1. In a large heavy-bottom skillet or Dutch oven, sauté the ground beef over medium heat until it loses its red color. Drain off the fat. Add the onions and celery and continue to cook until the beef is completely cooked. Add the minced garlic and chili seasoning and continue to cook the mixture for one minute, stirring constantly.

2. Heat the tomato sauce in a small heavy-bottom pot, stir in the corn meal, and cook this mixture over low heat for one minute.

3. Add the tomato sauce mixture to the beef mixture in the large skillet or Dutch oven. Simmer this mixture for five minutes over low heat. Transfer the mixture to a large, shallow casserole dish, cover and refrigerate overnight.

4. The next day prepare the biscuit dough according to the biscuit recipe that follows.

5. On a floured board, roll the dough into a rectangle approximately 12 by 25 by ¼-inches. Place the chilled chili mixture into the center of the dough and spread it evenly to about ½ inch from the edges. Moisten the edges of the dough with a little milk. Roll up the dough from the longer (25-inch) side. Seal the edges when the roll is complete. Pat the roll lightly with floured hands to shape it evenly.

6. Lightly coat two cookie sheets with vegetable shortening.

7. Using a very sharp knife, slice the roll into disks about 1 inch thick.

8. Space the disks evenly on the cookie sheets and bake in a preheated 425-degree oven for 25 minutes or until the pinwheels turn a golden brown. Serve immediately with your favorite sauce.



*The author testing one of his chili creations*

## Biscuit dough

### Ingredients:

3 cups all-purpose flour  
1½ Tbsp. double acting baking powder  
¾ tsp. kosher salt  
6 Tbsp. butter, margarine, or shortening  
1⅛ cups buttermilk

### Method:

1. Sift the flour, baking powder, and salt together in a mixing bowl.

2. Cut the shortening into the flour until the mixture becomes grainy.

3. Add the milk and stir into the flour mixture just enough to make the grains stick together and form a soft dough. Turn the dough onto a floured surface and knead lightly for about 30 seconds. The dough is now ready to roll.

## Tricia's chicken chili

Here is a light and flavorful chili that was created by my three children, Sarah, Jason, and Michael, with a little help from my wife, Tricia. I was determined to prove that it isn't necessary for one to be a dedicated chili head or experienced cook to make a good chili. Tricia is an accomplished cook, but has seldom made a chili from scratch or developed a chili recipe. The only experience my three children had with chili was from bowl to mouth. To set the stage for this unusual event I decided to make a fresh batch of chili seasoning with the help of the kids. I will describe the adventures and surprises of this session in an upcoming issue on children in the kitchen.

After we finished the seasoning I asked everyone to think of the ingredients they would like to use if they were making a special chili for themselves. Tricia volunteered to write down all of the suggested ingredients and help the kids put together a recipe using as many of the ingredients as possible. My contribution was the chili seasoning and marjoram. Tricia suggested the chicken and determined the amounts of the individual ingredients. Jason and Michael searched the refrigerator vegetable bin and came up with the onion, bell pepper, and garlic. Sarah has developed a love for hot and spicy foods and she insisted we include a can of tomatoes with hot chilies. She also figured out how much chicken broth would be necessary to maintain the proper amount of moisture in the stew. We all voted together on the type of beans. I lost.

### Ingredients:

8 oz. dried, red kidney or pinto beans (I like pinto beans, everyone else prefers red kidney)  
cold water to soak the beans  
2 Tbsp. peanut oil or other light oil  
2 lbs. boneless, skinless chicken breasts diced in ½-inch pieces  
1 medium onion, diced medium  
1 large red bell pepper, diced medium  
2 cloves fresh garlic, minced  
2 tsp. chili seasoning (I wanted more, but was overruled by the group)  
1 tsp. McCormick Grill Mates Montreal Chicken seasoning  
½ cup chicken broth  
1 10-oz. can diced tomatoes with chilies  
1 tsp. dried marjoram

### Method:

1. Soak the beans for six to eight hours in enough cold water to cover the beans by two inches.
2. Drain the beans and discard the soaking water. Rinse the beans in cold running water. In a suitably sized pot

cover the beans with enough fresh water to cover them by 2 inches. Over medium heat simmer the beans until they are tender and fully cooked. Drain the beans immediately and set them aside.

3. Heat the oil in a Dutch oven or other heavy-bottom pot over medium heat. Add the chicken and sauté until it loses its pink color. Add the onion, bell pepper, and garlic to the chicken and continue to cook the mixture until the chicken is fully cooked.

4. Gently stir in the chili seasoning and chicken seasoning. Continue cooking the mixture for another 60 seconds.

5. Stir in the chicken broth, diced tomatoes, and marjoram and slowly simmer the chili, uncovered, for 20 minutes.

6. Gently fold in the beans and simmer the chili for another two or three minutes, just long enough to heat the beans.

7. Serve immediately with your favorite warm-from-the-oven corn bread or over rice.

Well, amigos, you now have the basic art of chili making as seen by Dick, Tricia, Sarah, Jason, and Michael. Let us know what you think of our creations and please share some of your chili ideas and concepts with us. Δ

For those who would like to get in touch with Chili Appreciation Society International, the address is: CASI, P.O. Box 3204, Sierra Vista, AZ 85636-3204 (520) 378-7179. Or visit their website, [www.chili.org](http://www.chili.org), where you can find the recipes of past Chili Cook-off champions.

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# Letters

(Dear Readers - Thank you for writing to Backwoods Home Magazine. The opinions and suggestions we receive from our readers are very important to us. We regret that we are no longer able to print or individually respond to every letter received due to the volume. We do read every letter received, and pass them along to the editor or writer concerned. We print a selection from our mail that best represents the views and concerns of our readers.

— The Editors)

## Real gun criminals

*Why indeed? Because we have no choice. Who can we vote for that is not a swine? In CA you cannot get a permit, unless, unless you are a big shot or an ex-cop. I worked there as a security agent and it was dicey. Only the cops can issue permits, and they will not.*

*We could, constitutionally, rise up and throw the wretches out. But the last time we tried that, they burned the South even with the ground. And it was other Americans who did the dirty work. Not too encouraging.*

*I pray every day for decent government. One hopes that Americans will turn off their TV sets and rise up quietly, like the Russians did, and just walk away, and that will be the end of it.*

Michael Peirce  
mpeirce@mindspring.com

*You're right. We should demand to know of all politicians pushing for gun control, who among them have permits to carry. Also, before they open their mouths in favor of gun control, they should sign waivers to voluntarily end their protection by armed guards, either by state or federal officers or private guards. If they refuse, their votes don't count. Let them try that on for size.*

Bob Gentile, Atlanta, GA

*This may well be the best piece on this subject that I have ever read. Thank You.*

Lamar Brown, a0469@alltel.net

*Thanks for your article on guns. You are right about why do we let this happen? But Americans are letting a lot of things "just happen." Only articles like yours will help hit them long side of the head.*

*The real enemies are also brain dead. The plan does not have to make sense. The only real reason is to disarm us following the blueprint of Pol Pot, Stalin, Castro, Hitler, and the usual suspects making armed assault against the population easy as pie.*

*My subscribers (I run a "forwarding" service to a great group all over the world) for the most part understand that the REAL reason must be emphasized instead of fingering the obvious enemies like Feinstein, Schumer and the socialist Democrats.*

*They are following the blueprint same as Joe Biden must. Must? Probably, by now, they must.*

*It is the One World Government—New World order, my friend, nothing more.*

*Get ahold of the 21 Goals of the OWG-NWO and you will see the entire plan has almost all been checked off. But I know you know this.*

*If you do, write about that instead of your splendid premise that we should DO something about the gun grab because we need to defend ourselves against street criminals.*

*I urge you to go the whole way.*

*Start with the United Nations mandate, voted on in their DISARM THE UNITED STATES in Vienna almost a year ago. The vote was 17 to 1 for disarming us quickly. The one vote against was cast by Wayne LaPierre.*

*He was, sadly, the only representative at that UN meeting about confiscating guns from the US citizens.*

*There were no congressmen, no senators,—no one (certainly) in the Clinton administration speaking for the Second Amendment.*

Karolyn Martin  
kmartin@granbury.com

*Let's try a little PC (Plain Common) Sense.*

*There are such things as BG (Bad Guys) with Guns. They have them regardless of gun laws, because they are lawless. Unless, of course, we prosecuted all gun-toting criminals, which we don't.*

*So we need Good Guys around with guns for our protection. They include the Military, Police, and PG (Plain Good) Guys with guns.*

*The Military can go bad, if their top leadership sells out. The Police can go bad, with the wrong leadership. But thousands of GG (Good Guys), individualists, good citizens, qualified, and licensed to carry guns, are the best protection that any community can have.*

*So why are they taking the guns away from the GG (Good Guys)? Is it really "for the Children?" Is that why? Why did Adolph Hitler do it? Why did Stalin, Mao, and all dictators do it?*

*Was it "For the children?" Or were they too, afraid of the GG (Good Guys) with Guns? Did they have something bad in mind when they confiscated the guns? Could William Clinton and the Media have something bad in mind for us? I say yes. They could, and do. It is called the New World Order. A radical departure into an Orwellian World without freedom, under the U.N.*

*GG (Good Guys) with guns were provided by our Constitution to restrain future enemies of Freedom from having their way. When and if our personal weapons are gone, we are totally defenseless. Is that what*

they want? Did Hitler, Stalin, and Mao have plans? Do they have plans? Oh No? Would they ever lie to us?

Think twice about letting them eliminate the GG (Good Guys) with Guns. They/we are our only security when the chips are down.

Warren Appleton, Dennis, MA

Your article says it all, Dave...RE the press' complicity, especially in dancing on the graves of the children, they have a proven record of success in a campaign. The mainline press (7 sins) made it possible to turn Viet Nam and so many Asian citizens over to atheistic communism, by turning the American public away from winning...Has anyone given the full count of the thousands who perished trying to escape, plus those murdered outright? Why was it that only against communists were we not in a 'popular' war?...that's the self-answering question, isn't it? How's the finality, Democrat foreign policy coming along in communist N. Korea?—You remember the "7 Sins against the US" during Viet Nam, don't you? ABC—CBS—NBC—NY Times—Washington Post—Time—Newsweek.

John Maggiore, River Ridge, LA

"Which brings up a final question: Why are we letting this happen?"

WHY?

Why did Americans let Roosevelt steal their money?

Why did they elect Clinton?

Why did they allow Waco or Ruby Ridge go unpunished?

Why WILL they allow confiscation of guns?

Because Americans are uneducated, misinformed, selfish cowards.

Leszek Borkowski  
sborkowski@dmci.net

## Applause

Thank you for an excellent magazine. No. 63 was especially interest-

ing/educational from cover to cover. "Armed and Female" and "Finding the Best Dog for Country Life"—both very important and interesting to me. (The wet dog on page 28 reminds me of our dog "Dixie," my companion of 12 years. Particularly the head and facial expression).

We share our copies with a son who recently moved from eastern city life to Oregon to live in a rural area and more simply. His 8 year old son is having a great time exploring woods, checking on and helping with "chores" of ranch/farm life.

Dale & Marie Dinsmore, Sixes, OR

I've been a subscriber to your magazine for three or four years and was reading you long before I subscribed. I continue to enjoy BHM and hope that you don't change a thing! You might like to know that I consider myself to be a good Christian and that I find nothing offensive in your magazine except for some of the letters from my narrow minded Brothers and Sisters in Christ. It may come as no surprise that while I enjoy all of the contributors to BHM I look forward, most of all, to the thought provoking contributions of John Silveira. He is an excellent "burr under the saddle blanket" of those folks who need to be irritated. The Irreverent Joke Page is also a hoot, especially in our PC world.

I recently purchased a small bit of land in Michigan's Upper Peninsula and in the next couple of years will be building a retirement home for myself. It won't be "off the grid" and I won't be a total back-to-nature retiree; I'm too damned lazy for that and I've worked long and hard so as to be able to afford to indulge myself in my retirement. Now all I need do is find someone to share those so-called golden years and my bit of Paradise with.

Jeffrey R. Garner, Flint, MI

Keep up the good work. You're pretty much a lone voice crying in the wilderness. But more and more people are hearing you with every issue you put out. Use the internet for all it's worth.

Mark Broshar, Plainfield, WI

I love this magazine and it is the only one that I still subscribe to. I read the letters that you publish and often I am disgusted by some of the things that people write. I know that many people don't subscribe because of your political views but don't let them get you down. Only small minded people with big ego problems aren't interested in other points of view and this magazine doesn't need them anyway. All I have to say is thank God that we live in a country where it is still legal to publish such opinions. To those who dislike your opinion I would like to say listen to all points of view before you close your mind, or move to China!

Dave just keep up the good work and keep sending Backwoods Home to me and I will keep reading it from cover to cover.

Also I would like to read more about gardening in the South (zone 8) where it is mild in the winter and hotter than hell in the summer. Most of our days are extremely hot and have 100% humidity. The heat kills a lot of things except weeds.

Debby Widener, Haughton, LA

I found your booth in an energy show years ago. I've got every issue you've ever printed. I love your way of reporting the facts. I like the old cover better than the new glossy one (probably two or three years old now) I don't care for so much color. It's the information I want. You are brave people and I agree with everything you have to say except one or two things that don't come to mind at the moment.

Sita Milchev, Gualala, CA



*I just want you to know that I've enjoyed your magazine since I found it in a small town in Montana.*

*I've enjoyed the articles and am really happy that you all didn't press the end of the world topic any more than the one magazine.*

*Myself I had enough with having to work that night. I'm part of the law enforcement community in Denver.*

*A lot of people were mad that the city didn't do anything, but the jail didn't have any more people go to jail than any Saturday evening.*

Fred C. Lester, Federal Hts, CO

*We still love your magazine, and we are ready to begin again this spring with your information in hand. We were finally able to get up to our place at 10,000 ft today because the snow is starting to melt a little. We had a blast! Our neighbor was up there, too, working on his place. Anyway, I'm just writing to tell you I really love A. Evangelista's articles. I love to write myself, and I even have a couple of her books. She's so practical, down to Earth, and full of tried and true experience. I hope you'll let her know sometime. Actually, all of your writers are just full of character. I miss the "country moments" photos, though. They were really cute!*

Mark & Nicole Williams  
Ft. Garland, CO

## **Cordwood home**

*I'm writing this letter because of the many letters I've read that have inspired me. I hope this will be an inspiration to someone else.*

*Years ago I learned about cordwood masonry and thought I'd like to try it someday. I've never lived in "the city," but in small towns. I've always had the dream of building my own home in the country. Well, a few years ago I took the first step. I bought 13 acres in Bath County, Virginia. It's only 11 miles away from where I live now in Covington, but*

*it's in a very rural county. It's all open pasture land so the first spring I started planting fruit trees, Christmas trees, and making plans for building a small round cordwood house. Having never built anything like this before, I spent a lot of time studying and designing. By the following spring I had most of my wood cut and my foundation ready to pore. In June of 1998 I started my 628 sq. ft., two story, round cordwood cottage. After 4 months of working evenings, weekends and using 2 weeks of vacation time, I had my cottage under roof. The rest of the fall, winter and spring was spent finishing the inside.*

*There were times when I doubted myself and what I was doing. But, I kept up the hard work and now I'm very pleased with the finished product. It's small, but everyone loves it. Throughout the process many people slowed down or stopped by to see what we were building. We received nothing but positive comments. Some people said we should have built it bigger, but that was not my intension. I wanted to build something small and inexpensive. Something that I could gain building experience on. Something we could live in while we built something larger. I believe that I accomplished my goal.*

*I hope to build a larger house in a year or two and I'm sure the cordwood cottage will be a valuable addition to our property. We could rent it out, use it for a small business or just a guest house.*

*I have gained a great sense of accomplishment and feel more confident that I can build something bigger or do other things I may have not believed I could have done before. My advice to anyone who wants to live "the good life" is to set your goal, have patience, believe in yourself, work hard and trust God.*

Don Harrison  
Hot Springs, VA

## **Hawaii**

*Thanks for the copy of The Declaration of Independence and the Constitution of the U.S. The first thing I did was turn to article 1 section 10 just to make sure it was still there. It seems like that particular article has been dropped from most of the schools text books these days. It won't be long before the Second Amendment gets watered down or left out of the Constitution. I guess it's all part of the "Dumbing of America."*

*Have you guys ever thought of offering a similar sized booklet containing an index to articles in the past issues of Backwoods Home? There have been quite a few times when I had to skim through 40 to 50 issues of BHM to find an article that would help me with a project. This "concordance" would be great for us subscribers who keep and file every issue but can't remember what article was in which issue. I know you printed something like it in a previous issue but I can't remember which issue it was in. It's just a thought.*

*Since I have your attention, I'd like to comment on Skip Thomsen's article about the Island of Hawaii (BHM Nov/Dec issue). I don't know how long Skip has lived in the Islands but his euphoric description of Hawaii indicated that it couldn't be very long. His enthusiasm reminds me of the first time I took my kids to Disneyland. All of the Islands are pretty, BUT you can't eat pretty and it doesn't make up for freedoms we lose whenever the legislature starts a new session. Joe Schmoe and Micheal Shaum made good points in their views of Hawaii (BHM March/Apr) but they didn't mention how stupid and intrusive the state government is. Take for instance the introduction of a bill that would allow government workers time to take naps during the day to increase productivity. The naps would be bad enough but snacks would be provided courtesy of the*

taxpayers; or, how about a bill that would make organ "donations" mandatory. This has been dubbed the "Frankenstein Bill." Both of these bills probably won't make it, but one bill that's moving right along is a bill that would require the re-registration of privately owned firearms every couple of years; much the way cars have to be registered every year. Hawaii's State Government is extremely anti gun.

We're also going battle (again) with a governor who is hell bent on fluoridating the water supply.

There's more; much more that would make you cringe.

I'd advise anyone who wants to move here to do his or her homework first. Find out why an ever-increasing number of the local people are moving to the continent. Ask why people move back to the mainland after a short residency here. Save yourself some stress and ask first.

John Mayer, Honolulu, HI

## Y2K, dogs, snakebite

I just read through the May/June issue, and a few minor things that I found throughout the issue bother me. I'd appreciate it if you heard me out:

### Y2K

I called back in February, and I believe that I spoke to Ilene. "American Survival Guide" had just come out with a review of a book that claimed that the world would end on 5/5/00 when all the Antarctic ice broke loose. We had a good laugh. I called BECAUSE you had predicted that the doomsayers would find another 'crisis' to proclaim. Saying that no one gave you credit is not correct—I did.

### Dogs

The article was fine for a general dog article; but, for dogs in the country, I believe that there was one serious omission: no mention of coyotes. At least here in Nevada, you had better have a good-sized dog, or a pair

of medium-sized dogs, or Mr. Coyote is likely to make Fido his special dinner guest.

Also, too many move to the country "so the dogs can run free." This irresponsible behavior results in both semi-wild packs and anonymously placed poison baits, or shootings. Keep your dog within a fence. You also might consider, when you choose your dog, how much the dog might resemble a coyote—and get accidentally shot.

### Snakebite

The advice Marjorie Burris gives (cut & suck) may be somewhat dated. I believe that the Sawyer Extractor, which applies a much greater suction, may be today's preferred method.

I did see someone once selling a "special forces snakebite kit," whose instructions started with 'cut & suck,' and concluded with 'then shake the snake vigorously, saying, "if you bite me again, it'll be worse the next time!"'

Looking forward to the next issue.

John Steinke, Reno, NV

## Evolution vs. creation

I WAS going to re-subscribe until I read the article by John Silveira on the age of the earth. I was disappointed to see first of all that he actually believes the philosophical propaganda put forth by the evolutionists...(his own first and second paragraphs used the words "best estimates" and "guess.") This is not scientific at all, but is a philosophical theory, a "faith" issue. Many true scientists will admit that they have no scientific proof of the earth being more than 6,000 to 10,000 years old, yet they present as fact this "billions and billions of years" theory. I wonder why this is?

Secondly, I was disappointed by the article because I don't see what philosophical issues have to do with homesteading, getting back to nature etc.

If you don't believe my statements, read two books. "Darwin On Trial" by Johnson and "Darwin's Black Box" by Bede. Both men are experts in this area and they both debunk the teaching of evolution as FACT...they both state it is a "faith" issue.

So, I will not be renewing my subscription.

Priscilla Dugan, Remer, MN

Even when I disagree with your articles, I find them interesting, even thought provoking, a rarity among magazines today.

The above was certainly true of "A very short history of the earth" written by Mr. Silveira. First of all, let me say that I believe in creation but am not a "Creationist," i.e. I don't believe the Bible teaches all things were created in 7 literal days. Also Genesis merely says "in the beginning God created the heavens and the earth." So if Mr. Silveira wants to say that was 4.6 billion years ago he could very well be right.

Also in Genesis chapter I can be seen what geologist Wallace Pratt noted to be essentially the sequence of the principle divisions of geologic time, in fact very similar to your graph of life on page 9.

Mr. Silveira uses the word creation several times in his article, but we differ in that I believe a creation necessitates a Creator and that animals and humans were created, and are not the product of evolution from a life form that came about by chance.

So I want to ask Mr. Silveira a question that I have asked many evolutionists and have yet to get an answer. The question is, how can the theory of evolution explain procreation? If life just happened by chance, what inspired it to start making copies of itself? And when animals and humans came on the scene, how, exactly at the same time, was there both male and female who had evolved simultaneously, the male ready with seed, the female with eggs and somehow they

*knew that if they got together, a new life would result? But that's only the beginning. For months her body would nurture and feed it, and then when it was born and still could not fend for itself, little milk factories sprouted to further nurture this new life. If we are to believe in evolution, this happened not once, but with every animal found on earth today. This of course only scratches the surface of what I believe can only be a God-given miracle.*

*Evolution is called a theory, and if a theory seems illogical, it should be challenged and that's my purpose in writing you today.*

Mark Trierweiler, Coeburn, VA

## Religious editor

*In your Jan/Feb 2000 issue one Michael Briggs wrote telling you that the mag. should have a religious editor. The second line of his reasoning for this was; "...for objectivity, since you folks aren't acquainted with the fine points of the Christian religion." Mr. Briggs please realize that this nation was founded on, among other things, freedom of religion. I know that Mr. Duffy recognizes and believes that. As such we must realize that if we get a "religion editor" in this magazine he/she would have to include ALL religions, not just Christian. Then, frankly, if this editor said something that even appeared to take a stand that favored, say, an Islamic stance over a Christian one there would be a major league hue and cry from the Christian faction probably calling for Duffy's head! This is one of the things I like best about Dave and his magazine, i.e., That he (and it) ARE objective...with religion, as well as most other aspects of human life in the U.S.A. If you want a Christian oriented magazine there are a number of them on the market for you, but let the rest of us have one that accepts viewpoints outside of yours. To maintain the*

*objectivity that your letter calls for, he (Dave) must never give in to one side of any argument just because it is the most commonly held one at the moment. Freedom of religion must allow all the rest, yes, even including Atheism, and not just allow us to be whatever denomination of Christian we may desire.*

Fred Forcee

phred89@hotmail.com

## Guns in America

*Your magazine is like a beacon in a maelstrom. Thank you and all of the major contributors—Silveira, Ayoob et. al.—for it. I especially enjoy reading your commentary My View. Issue No. 62 is no exception. Your article "Let's stop apologizing for guns" is excellent, well written and very informative—as usual. Gun owners, and hopefully many non-gun owners as well, know that guns prevent crime and protect us from criminals. Much has been written of this fact in BHM. But what about the deterrent value individual gun ownership has in making any foreign aggressor think very carefully about sending soldiers to invade the U.S. in a "conventional" attack where they would face a determined armed populace as well as regular and reserve military units? Also, how many non-democratic totalitarian governments in just the last hundred years or so have relied on gun control as a cornerstone of their philosophy? Most, if not all. And finally, if the most extreme element of the gun control forces were to succeed in their "holy grail" of completely disarming the American citizenry; who then would have the guns? The military of course and the police. But what about the corrupt element of these "protectors of the people." Well for one thing they will assure that a third group of people with a lot of money at their disposal will also be well armed—the criminals. And do you suppose for a minute that the*

*people running things—the politicians—will have to forfeit their guns? No way! You can bet your life on that.*

Freethinker, Las Vegas, NV

## Newsstand/CD-ROM

*I want the electronic subscription and have subscribed tonight. I read on your website at an earlier date about them being available on CD at a later time. Please let me know when and if this is going to be done. I like being able to share my magazine.*

*I am so upset by this idea of you not being able to get your magazine on the newsstands. I am a regular reader but I purchase your magazine at a local news agency and I believe this will decrease their business as well. I purchase five small magazines each issue from them and now they are also going to lose my business and this is a shame. It just breaks my heart. Monopolies just are no good for anyone.*

Mumsy, Plymouth, IN

*The Internet will destroy all publishing and magazine distribution monopolies. It is the greatest economic and freedom tool ever. The CD-ROM for years 7 thru 10 is available now for \$39.95. The CD-ROM for years 1 thru 6 will take longer to prepare since we have to scan in all the photos and drawings (we had no scanning technology in those early years) and recover text from old corrupted files. —Dave*

## Libertarian stand on abortion

*I agree with everything that I read in Backwoods Home and was even considering joining your Libertarian Party until I read about the pro-choice stand on abortions. If a woman is pregnant she has already made her choice. Whatever happened to "safe as a babe in a mother's womb?" The issue with a pregnancy*



is now a means of protecting an innocent life that has no voice. An American in every sense of the word that should have protection in the words of the Constitution and Bill of Rights that you are so fond of.

You squawk about losing your right to bear arms (which is important) but the poor babies are losing their lives. Shame on the people out here that can snuff a life at the drop of a dime and on the doctors that perform such procedures and wring their hands over the money they are making. What a damned industry. If they would just use their talents doing a few **free** organ transplants this world would be a better place.

I know a lot of people that refuse to donate organs because doctors are getting fat off of free organs.

Thank you for letting me vent. I don't want you to think I picket abortion clinics (I don't) or snipe the doctor's that do it (I don't) but once I find out a woman has had one or two and a guy brags about not being stupid and giving the money to a doctor instead of the woman. I have no more to do with them. People like that have no morals and they scare me.

Keep up the fantastic work and if I can continue to get the money together. I will continue the subscription.

Cynthia Weathers, Front Royal, VA

Libertarians are as divided as the rest of the country on abortion. I am pro-life, but I am also in favor of widespread education about birth control. I was not aware that the Libertarian Party had taken a pro-choice stand. Although I am a member of the party, I adhere mainly to its philosophical position of maximum freedom coupled with maximum personal responsibility. Plus the party is adamant in its defense of the Second Amendment, which is the main safeguard for all our freedoms. — **Dave**

## Water glassing eggs

I am a 70 year old semi-retired carpenter. Still work part time for some of my 20 plus year customers.

In your 5th year anthology page 322 you had an article about Water Glassing eggs. At that time you didn't know of a supplier of Water Glass. Well, my good wife of 40 years got on the Internet and found a place in Florida.

This is a very nice company. I made one phone call at 8:05 Monday morning, got to speak to a real person first thing. No menu, no music, no waiting. I gave them my order for one gallon. On thursday this same week I received my Water Glass via R.P.S.

Yesterday I was able to get 34 eggs packed into a gallon restaurant size pickle jar. I plan to take one egg out each month to see how long they keep.

Dave, I love your magazine. We still live in the house I built in 1960, on a 4-acre parcel my father deeded to me from a corner of his dairy farm, as a wedding present. We burn wood, most of it bought, have a generator and four PV roof panels. Doin fine.

Richard Hauth, Honesdale, PA

## Poison ivy/Bill of Rights

I'd like to compliment you on your excellent magazine. Issue #61 (Jan/Feb) contains a couple of items that I'd like to address.

In his very informative article, "Keeping Poison Ivy Under Control," Mr. Griebel left out one very good control and one very good remedy. If you live where you can do it, simply tether a goat within reach of poison ivy or oak; they eat it like candy. For a remedy for either ivy or oak, we use jewel weed. I prefer the juice freshly squeezed from the stalks, while my wife makes a tea by boiling the leaves and stalks of the jewel weed. Neither is taken internally, but are rubbed on the affected area.

Applied immediately following exposure, they will generally keep the rash from showing up at all. The juice is comforting on almost any type of rash, and is even soothing to sunburn pain.

On the letter entitled the Bill of Rights, I think that you and the author missed the point of the First Amendment, when it comes to a state or locality posting the Ten Commandments in school. Simply put, it is not forbidden by the First Amendment to do so. Unlike all the other original amendments, the First Amendment specifically states that "Congress shall make no law...", and, thus, limits only federal legislation, not state legislation (see the 10th Amendment), unlike most of the other amendments. By the careful wording of this amendment by the founding fathers, the intent to limit only the federal government is obvious in this case, as alien as the concept may seem to the way that we have been taught. The only truly Constitutional limitation on a state's handling of religious matters is that particular state's Constitution, whatever it may be. The popular phrase "separation of church and state" has nothing to do with the Constitution. It is an out-of-context excerpt from a private letter from Thomas Jefferson.

This exemplifies a very real and present danger in this country; too many people believe that the Constitution says what they would like for it to say, or what the Supreme Court (with ever-changing socio-political ideologies) claim that it says, instead of what it **ACTUALLY** says.

Gregory Kay  
gregk@zoomnet.net

Since the adoption of the 14th Amendment, in 1868, the state governments are held to the rights in the Bill of Rights, just as the federal government is, regardless of what their state constitutions say. So states can-

not make any laws "...respecting an establishment of religion, or prohibiting the free exercise thereof..." any more the Congress can.

— John Silveira

## Congratulations to Dave

*Congratulations on your 10 for 10 predictions for the year 2000!!! There—now you have a letter, and I can't imagine it will be the ONLY one you receive, now that you have pointed out how neglectful we've all been! Shame on us. I'm with you in regard to the pending planetary alignment, by the way. As you said—it's happened before, and we are still HERE...*

*I have to tell you how much I enjoy your magazine! I grew up in the wilds of Alaska back in the 40's & 50's, on an island accessible only by boat or plane—depending on the weather. Our only communication with the outside world was via a HUGE 2-way radio setup that took up an entire room & was powered for an hour, twice a day, by a gas operated generator. Those two hours were the only time we had electricity. We had "out-door" plumbing, running water only in the summer (which was brief) and we depended on the natural chill of Mother Nature for "refrigeration." We logged for a living: a crew of about 20 joined us on our island from late May to late September. The rest of the year, there were only my mom, dad, myself, and my brother's family of four. I was homeschooled, thanks to the Calvert Correspondence Courses out of Baltimore, Maryland—and very well, I might add! Your magazine is like a breath of fresh air, in our over crowded, gadget and energy dependent world, and brings back a rush of memories from a simpler, gentler time...*

*Keep up the great work—and those "Right on" predictions!*

Joy LaCole Shirley  
Bonney Lake, WA

*You have a great publication. Been reading it for years. Just ordered a gift subscription for my son, he loves it. So you don't feel bad, congratulations on your 10 out of 10 on Y2K stuff. Lots of generators for sale in our local paper!*

Clint Tawse, Pueblo, CO

## A letter from prison

*My brother, a Grants Pass area contractor, recently started a subscription for me to BHM—After I'd written to him about my wishes to live so far back of the beyond that it takes daylight 31 years to reach it—and I'd like to thank you for your fine magazine and refreshing attitude.*

*At one time, I had considered myself Libertarian in most ways, except as to legalization of drugs. But I've come to understand how insidious governmental regulation is, and that all law, not selected areas of law, must return to that which was envisioned by the framers of the Constitution, or we will not truly be free of its tyranny.*

*I have a unique perspective, being in prison for defending my children from a molester...prior to this, I had the usual public perception of prisoners and prison life. It ain't at all like I thought: it's worse, far worse—greater than 60% of the men I've spoken to would not be in prison if not for government intrusion, search and seizure laws, and rules making mincemeat of the Constitution.*

*This has affected me directly: After my arrest, my wife (whom I was separated from) put my stepdaughter, age 8, in foster care. The child was a handful, but only to her mother. Anyway, this little girl tried to commit suicide in the foster home by throwing herself through a plate glass window. Luckily, she bounced off. Instead of counseling, the county took charge of her, put her in mental health care almost 200 miles away, and then forced my wife to put our 2-*

*year old girl, the light of my life, in a foster home as well. Social services would not let my wife, or my 25-year-old son from a prior marriage, bring her to visit me in jail—saying it was bad for the child.*

*Nobody would anticipate this, but the Foster Mom went "Nuts" and threw my baby girl across a room, causing a concussion which the woman ignored. My baby was dead in the morning. My step-daughter is now living with the natural father she hadn't seen since she was 9 months old—contacted by Social Services.*

*I spent 25 years driving tour and city buses, until poor health sidelined me. I'm familiar with those regulations and rules. Yet I had no real idea of the power of "our" government to control every aspect of our daily lives, even down to destroying a family.*

*So now, my family is gone—even my son, whose own stepchildren were taken away when his fiancée, their mother, was arrested for "controlled substance" possession. Not being married to her, he had no say over the kids. He kind of went off the deep end, sold my van, stole my social security income, and took off for parts unknown.*

*Eventually I'll find a piece of land and build my itty bitty cabin way off the grid, and write about happier things. Your publication is giving me hope that it is possible to do, with articles and ideas that, while I may not agree with, certainly provoke thought.*

*Although I've had health problems, including a stroke last January, I'm determined to live far away from any city and its immediate medical help. I'd rather die amongst the trees than live in the rat race—although I have a good idea that getting clear of cities will prolong my life. Thank you once again for a fine publication—keep it up! I wish I'd found you years ago.*

Thomas A. Darby K74687,  
Vacaville, CA

## Slug throwers

A couple of years back BHM published an article I wrote, about shotguns for backwoods uses. Shortly after that I received a pretty nasty letter from this guy here in Indiana, who mostly was upset because (in his opinion) no shotgun was capable of the sort of accuracy I'd claimed for the newer rifled barrels for slug guns.

Yesterday I received the enclosed letter, telling of his results now that he has finally tried one of those nicely accurate slug throwers. Seems that now he's probably more impressed than I was! I thought maybe you'd like to see this letter...

Rev. J. D. Hooker

Hello Joe:

Well, as you can see, two things have happened. One, it's been quite some time since we've contacted. Two, the address has changed and now we have our own address out here in the country. Even though it sounds like a city address, we're way out in the boonies. That's one of those new E911 things.

Well I guess it's time for me to say, please accept my Humble Apology many times over!!

I got one of the Mossberg 695 Slugster Turnbolt 12 ga. "Rifles" some time back. I was really disappointed with it at first as it only printed 5 to 6 inch groups at 100 yards using Federal or Remington slugs. It sat in my gun vault for who knows how long. Late last summer I purchased a LEE Slug Mold. Don't know if you're familiar with it but the slug has a "cross key" cast into the hollow base. It is loaded into a standard 1 or 1 1/8 oz. plastic shot cup and locks the slug to it. The plastic cup locks into the rifling and the two work together to impart positive spin on the slug like a sabot load. I recovered some of the shot cups to check them out and that key definitely does do what it's advertised.

Now my surprise and delight! I know, you told me so! At 50 yards, firing from bench, the only way I can tell I'm hitting the target after the first shot is the slight jump the ole piece of log I shoot into makes when the slug hits. They go through the same hole. At 100 yards, it shoots about 2" or a little under. I MEASURE my shooting ranges. Haven't had time to check it out at farther ranges, but I'm now satisfied that I have a 12 ga. weapon that performs like a rifle. I admit that if I hadn't done it myself, I still wouldn't believe it, but now I've proven it to myself.

If you haven't tried one of these Lee Molds for these slugs, you owe it to yourself. They are aluminum molds and the easiest to use I've ever worked with. Compared to the cost of commercial Sabot loads, just a few shots will pay for the mold and they come with handles.

Lee recommends using pure lead for the slugs. I contacted them to see if it was for safety or some other reason. They told me that it was because of the cooling shrinkage rate of different alloys and that I might have a problem getting the slugs off the core pin if I didn't use pure lead. Well I had to try something I had in mind and it's worked great! I've been purchasing Federal Heavy Field Loads as the box says at Wall Mart for just over \$4 a box. They are loaded with 1 1/8 oz. shot. The slugs are 1 oz. So if anything, the velocity is higher and there is no bore pressure danger with a lighter payload. Haven't gotten to shoot them over my friends Crony yet, but they shoot great. I open the shells, dump the shot into my melting pot. Melt down the shot and cast it into slugs. Put the slugs back into the same shells and then close the crimp with my Lee Loader. These are actually the ones that are shooting the one hole 50 yard groups!

I measure my shooting ranges when testing because of technicalities. Many people exaggerate or simply

can't estimate range. I once had a friend I worked with that swore up and down the range we were looking at the target to was 300 yards. I told him no and no again and he said yes and yes. I finally went and got a 100 ft. roll tape and started measuring. It was precisely 97 yards.

...One more thing. I did top that Mossberg with a cheap Bushnell Sportsview 4X scope I had laying around in my shop. Although it does have real nice iron sights, my old eye sure isn't what it used to be. The only one I have has had to do the work of two for over 31 years now since I caught a piece of a frag. Grenade back in 68 when I was just 18 years old so I guess I can't complain about being a bit fuzzy nowadays.

J. Bishop, Oaktown, IN

## Dehydrator coil

Your magazine is fantastic! I knew when I saw the preliminary issues that I was going to be satisfied with it. When the last issue arrived supper was a half hour late. I needed the time to read the article by Charles Sanders regarding the building of a food dehydrator. I've wanted one for years but all were either the round style or too expensive for my pocketbook. The very idea of building one of my own was ideal, and the prices of the items were within range.

But now I need help. I stopped at the local hardware store and requested the 600 watt ceramic heat coil. They didn't have one in stock, checked their catalog and didn't have one to order. They had catalogs for the neighboring town hardware and they didn't carry it either. So I contacted two hardware stores that provide appliance repairs and had no better luck. Could you possibly provide the name, address and phone number of the hardware store where the ceramic heat coil was purchased? I'd have the phone lines burning to get a call to that outfit. The strawber-



ries, raspberries and apple trees have been providing bumper crops the last three years. I'd really appreciate having a food dehydrator and the timing is perfect to build one.

Just an aside. I brought my Backwoods Home Magazine into work to read during break periods. Well, one fellow worker is putting in a subscription, another is checking out your web site, another was writing down information on the suppliers of woodstoves, wood heaters, and saw mill operations, and today another staff requested to see the magazine overnight. Hope he brings it back tomorrow!

Linda L. Johnson, Mapleton, MN

The address and phone number of the ceramic heat coil provider is: Akinsun Heat Company, Inc., 1531 Burgandy Parkway, Streamwood, IL 60107, Att: Mr. Syed Musavi, Telephone: 630-289-9393. They have two models available: #CS1003-01 500W, #CS1003-02 660W. Cost is \$25 each. — **Charles Sanders**

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# The last word

## Stumbling over your own stupidity

By John Silveira

**T**here are several morals to be found in this story. You can find most of them yourself. But I'm only interested in one of them. The story was originally told to me by my father. It happened in the 1950s, though that doesn't matter because it could have happened anytime. It is a story about cleverness and stupidity—in that order—and one undoing the other.

I'm going to change the name of the main character in case someone still living is embarrassed by what I'm about to describe, but not so embarrassed that they won't step forward and hire a lawyer. The man was my father's brother-in-law during his second marriage. I'll call him Tom.

I don't recall that Tom ever had a steady job, and he barely had the means to support himself and his family. He lived in a shack in Maine on an old road at what seemed, to my little-boy mind, to be out beyond the edge of civilization. I went there only once, with my Dad, my stepmother, and two of my sisters. Tom came out the front door followed by his wife and three or four kids. The kids were all dirty, dressed awkwardly, and younger than I. In the front yard was an old pickup Tom drove and several other vehicles up on blocks. There were also discarded kitchen appliances, a burn-barrel, rusty buckets, rusty shovels, broken toys, and other assorted trash. We didn't go into the house, but I imagine it was more of the same. The kids stared, the two youngest clutching the skirt of their Mom's dress. I mention these things to give you a sense of their poverty. They were as poor or poorer than anyone else I'd seen up to that time. And every one of them was pencil-thin.

There were no trash services in those parts of rural Maine in the '50s and what many of the poor folks did was load their trash into a pickup, or whatever they drove, and take it a suitable distance from home and dump it on the side of the road. That's what Tom was doing the night of this story.

I don't know if he had a destination in mind, but he drove along and suddenly, right in the middle of the road, caught in his headlights, was a deer. Tom stopped, but the deer didn't run. It was blinded by the pickup's lights.

Tom waited, but still it didn't run. Even though it wasn't even close to hunting season, this could be food for his family. He reached into the glove compartment and pulled out a .38. He opened the driver's door and the deer, still locked by the headlights, didn't move. Using the top of the door to steady his hand, he drew a bead. And that's when he suddenly got a great idea. Poaching carried a heavy fine, so he thought of an inspired plan to outsmart the game warden

should he be caught. And keep in mind that, though what Tom was about to do was illegal, it wasn't necessarily immoral. He was, after all, just trying to feed his family.

With no more hesitation, he pulled the trigger and the deer died there in the road. He quickly field-dressed it in the headlights and cut off its head. Then he dumped the head with his trash and went home.

A few days later the game warden came around. "You got a deer here, Tom?"

Tom wasn't going to get caught lying. Besides, he had *the plan*. "In the barn," he replied.

The warden must have been a little surprised that Tom admitted it so easily, and they went to the barn where the deer was hung, skinned, and dressed.

The warden examined it closely. "Where'd you get it?"

"Found it dead on the road," Tom replied.

The warden examined it closer. "You gonna eat it?"

"Yup."

"Without knowing what it died of? I wouldn't eat it if I were you."

"You're not me, and I'm not you," Tom said.

I guess back then there were no laws about keeping a deer you found dead on the road. So the warden started to leave.

"How'd you know I had it?" Tom asked.

"Found the head in a ditch with some trash. Went through the trash and found a bill with your name on it."

Tom hadn't counted on that. But it was okay, he'd already outsmarted him. The warden left.

And, folks, that was where the story should have ended, with Tom having his deer to feed his family. But he couldn't keep this to himself. He had to let all his friends know how he'd outsmarted the game warden. How, when he was about to pull the trigger, he had a brainstorm and, aiming carefully, he'd shot the deer in the neck. Then, after he'd field-dressed it, he'd cut off its head, starting the incision right where the bullet had gone in and continuing the cut all the way around until he'd come back to the hole he'd started from. That done, the bullet entry point disappeared and he'd taken the bullet and thrown it into the bushes and drove on.

The story spread fast in that corner of Maine and a few days later the warden was back. This time he had the head, and when he lined it up on the carcass the entry wound was evident. When he pulled it away he could see where the two halves of the wound channel, shallow and almost unnoticeable since it had been cut in half, lined up perfectly.

Tom lost the deer and, as I recall, paid a steep fine.

Now, you draw whatever moral you want from this story. You can say that it demonstrates that crime doesn't pay, or that the best laid plans of mice and men often go astray, or that there's no such thing as a free lunch. But what I learned from this story, even when I was a little kid, is that when you've completed a task through your sheer brilliance, try to resist the temptation to undo it with your own stupidity. It's hard folks. I still do it sometimes, myself. Δ

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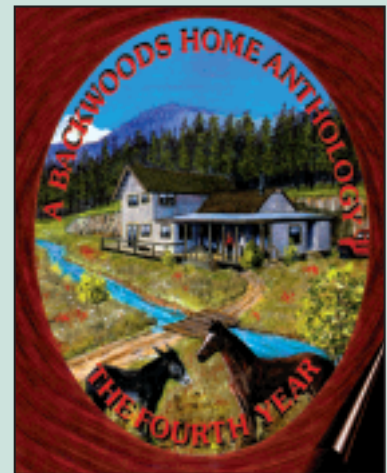
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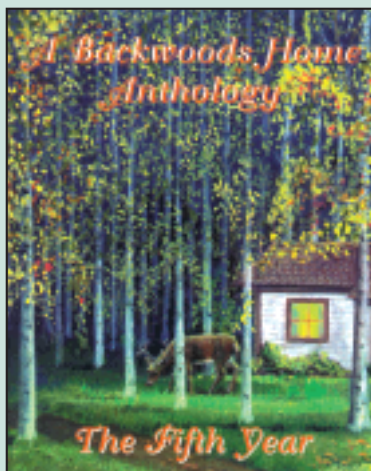
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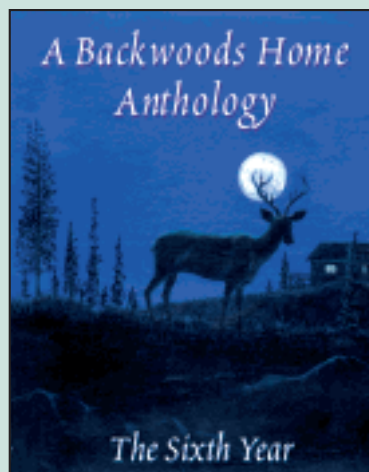
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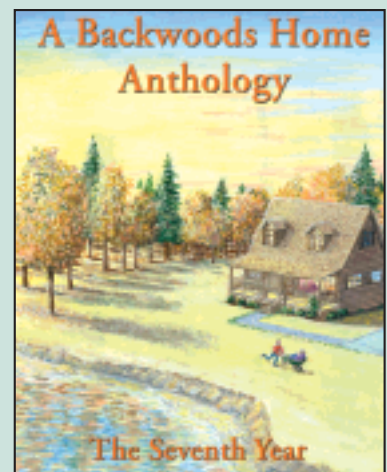
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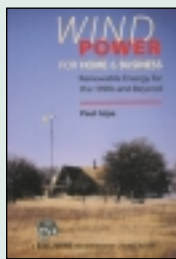


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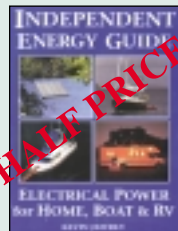


EN2

## WIND POWER FOR HOME AND BUSINESS

A comprehensive guide to modern wind machines, featuring rugged, low-cost designs suitable for homes, businesses, and ranches, both on and off "the grid." It shows how to measure the wind and how to choose, install, and operate your system.

414 pages, 6 x 9" ppbk. \$38.00



EN3

## INDEPENDENT ENERGY GUIDE

This is a guide to planning the ideal independent power system for your home, boat or RV. Covers the basics of theory, as well as the nuts and bolts of AC & DC, photovoltaics, wind, water, generators, energy storage, system operation, and more.

280 pages; 7 x 9 1/4" ppbk. ~~\$23.95~~  
\$9.98+\$3 S&H = \$12.98



EN4

## MORE POWER TO YOU!

This book is a step-by-step manual on the construction and operation of a proven, high-power electrical system built around a small diesel generator. It's also the best book you'll ever find on the China Diesel generator. We have used it here at Backwoods Home.

82 pages; 8 1/2 x 11" comb. bnd. ~~\$12.95~~  
\$4.98+\$3 S&H = \$7.98



EN5

## HOW TO LIVE WITHOUT ELECTRICITY AND LIKE IT

This book describes many alternative methods that can help the independently inclined to become more self-reliant and free of the utility companies. The author explains how to heat and cool your home effectively; refrigerate without electricity; charge batteries; and much much more.

164 pages; 5 1/2 x 8 1/2" ppbk. ~~\$18.95~~  
\$6.98+\$3 S&H = \$9.98



EN6

## THE EVOLUTION OF AN INDEPENDENT HOME

This is the story of how one man used local resources, ingenuity, imagination, and patience to create a home-stead powered and heated by the sun. Author Jeffrey Fowler is an authority on remote solar electric homes.

254 pages; 8 x 10" ppbk. \$24.95



EN7

## THE NEW ELECTRIC VEHICLES

272 pages of EV technology, 500 photos and drawings, and more than 175 design and technical sidebars. Meet the individuals and teams who have converted or built EVs. There is detail on 65 EVs—ranging from freeway machines to bicycles, motorcycles, and neighborhood EVs—to help you select an EV of your own.

272 pages; 8" x 11" ppbk. ~~\$27.05~~  
\$12.48+\$3 S&H = \$15.48

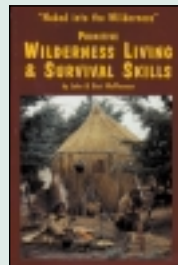


SS1

## MAKING THE BEST OF BASICS

Be prepared: Give your family the security of being able to live from your own resources for up to a year. This book gives you vital information on in-home food and water storage, kitchen gardening, drying fruits and vegetables, energy and fuels, vitamin supplements, and much more.

272 pages; 8 1/2 x 11" ppbk. ~~\$24.95~~  
\$10.97+\$3 S&H = \$13.97

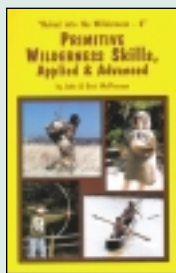


SS2

## PRIMITIVE LIVING & SURVIVAL SKILLS

This is a comprehensive "how-to" manual on all major primitive outdoor living skills, including hunting and gathering, fire, cooking, containers, tools, shelter, and much more. Authors John and Geri McPherson are leaders in the field of primitive technology.

408 pages; 5 3/8" x 8 3/8" ppbk. \$27.95

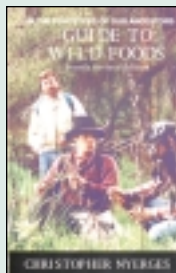


SS3

## PRIMITIVE WILDERNESS SKILLS, APPLIED AND ADVANCED

This book takes the skills covered in the McPhersons' first book (SS2) and applies them in daily primitive living situations. Includes brain tanning, making a dugout canoe, flint knapping, lighting, sewing with a bone needle, water containers, wilderness health and nutrition.

296 pages; 5 3/8 x 8 3/8" ppbk. \$27.95



SS4

## GUIDE TO WILD FOODS

Author Christopher Nyerges is a naturalist who has been leading wild food outings since 1974. His Guide provides all the details needed to identify common plants used for food, medicine, etc. Every plant mentioned in the book is illustrated and the book is indexed, making it an easy reference to use out on the trail.

288 pages; 5 1/2 x 8 1/2" ppbk. \$18.00



SS5

## HOW TO DEVELOP A LOW-COST FAMILY FOOD-STORAGE SYSTEM

Here's how to institute a low-cost food-storage program. The author explains how to determine your storage needs, how to find sources of low-cost bulk foods, and how to choose among preservation methods. This book is a must for the family expecting hard times ahead!

114 pages; 5 1/2 x 8 1/2" ppbk. ~~\$13.00~~  
\$5.00+\$3 S&H = \$8.00



SS6

## HERBS FOR HEALTH AND HEALING

One of the most informative and entertaining herb books on the market. Safe and simple herbal formulas for dozens of health problems. Includes special herbs for women, men, and children. Discusses using herbal fragrances to heal, herbal first-aid, cooking with healthful herbs, and more. Photos and drawings are black and white.

374 pages; 6 1/2 x 9" ppbk. ~~\$15.95~~  
\$7.48+\$3 S&H = \$10.48

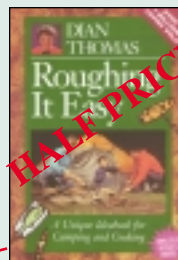


SS7

## THE MAGIC AND MEDICINE OF PLANTS

A practical guide to the science, history, folklore, and everyday uses of medicinal plants. Learn to identify nearly 300 North American flowers and plants believed to have some therapeutic value. More than 700 color photos and illustrations. Fact-filled text.

464 pages; 6 3/4 x 11" hdbk. ~~\$31.00~~  
\$14.00+\$3 S&H = \$17.00



SS8

## ROUGHING IT EASY

Dian Thomas, former co-host of the *Today Show*, presents her best-selling, all-in-one bible of camping and outdoor fun. This new enlarged and updated guide is filled with innovative hints for making camping and cooking safe, imaginative, and above all, enjoyable. Over one million copies sold. Read this book and hit the trail.

241 pages; 6" x 9" ppbk. ~~\$17.95~~  
\$7.48+\$3 S&H = \$10.48



# Backwoods Home BOOKSTORE



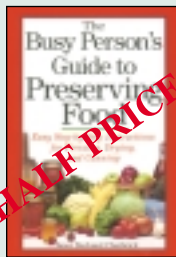
FP1

## THE CANNING, FREEZING, CURING & SMOKING OF MEAT, FISH & GAME

This new book describes the best ways of processing meat, fish, and game with emphasis on canning, freezing, curing, and smoking in the home, at the camp...anywhere. It contains everything you need to get started including sketches for building your own smokehouse.

202 pages; 5 3/8 x 8 3/8" ppbk. ~~\$15.95~~

~~\$6.48+\$3 S&H = \$9.48~~



FP2

## THE BUSY PERSON'S GUIDE TO PRESERVING FOOD

Step-by-step illustrated instructions for preserving fruits and vegetables: freezing, canning, cold storage, root cellaring, and drying. Includes recipes for meals, salsas, herbal vinegars, pestos, jellies, and teas.

212 pages; 6 x 9" ppbk. ~~\$17.95~~

~~\$7.48+\$3 S&H = \$10.48~~



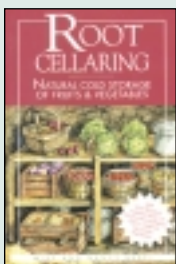
FP3

## DAVE MILLER'S HOME-BREWING GUIDE

Miller provides brewers with his two decades of know-how to ensure that they make great-tasting beer or ale every time. Explains equipment of the 90's, recipe formulation, and troubleshooting. Includes 33 recipes.

358 pages; 6 x 9" ppbk. ~~\$19.95~~

~~\$8.48+\$3 S&H = \$11.48~~

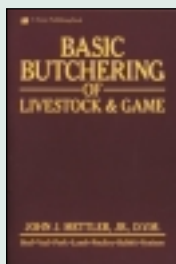


FP4

## ROOT CELLARING

This book tells you how to use root cellaring as a means of natural storage. It is the first book devoted entirely to the subject and covers it thoroughly. It explains the vegetable and fruit varieties that store best, how to use root cellars in the country and the city, how to build your own root cellar, and more.

298 pages; 6 x 9" ppbk. \$17.95



FP5

## BASIC BUTCHERING OF LIVESTOCK & GAME

This book is for anyone who hunts, farms, or buys large quantities of meat. The author takes the mystery out of slaughtering and butchering everything from beef and veal, to venison, pork, and lamb. The text is easy-to-follow and there are 130 detailed illustrations to assist in the complete step-by-step instructions.

194 pages; 6 x 9" ppbk. \$17.95



FP6

## BACKYARD MEAT PRODUCTION

With the helpful instructions in this book, you can easily meet your family's animal-protein needs for a fraction of the amount you currently spend, while maintaining a higher standard of quality control over feeding and butchering that will ensure healthier meat for you and your loved ones.

132 pages; 5 1/2 x 8 1/2" ppbk. ~~\$17.95~~

~~\$7.48+\$3 S&H = \$10.48~~



FP7

## COLD CLIMATE GARDENING

Provides invaluable information to northern gardeners that shows how to grow food, landscape, protect vulnerable plantings, warm up the soil earlier, and just which species are appropriate to your area. This book is useful for those who garden in microclimates like valleys or hillsides or those who just want to extend their growing season in any climate.

308 pages; 6 x 9" ppbk. ~~\$19.95~~

~~\$8.48+\$3 S&H = \$11.48~~



FP8

## DIRT CHEAP GARDENING

This book contains tips, tricks, and hints that show you hundreds of ways to save money in your garden including how to reuse and recycle; identify and acquire useful tools; use low-cost ways to ensure healthy plants; buy, save, and start seeds; obtain plants cheap—or free; and even which plant varieties save money.

166 pages; 6 x 9" ppbk. ~~\$12.95~~

~~\$4.98+\$3 S&H = \$7.98~~



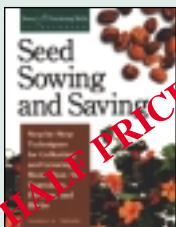
FP9

## CARROTS LOVE TOMATOES

This is more than just carrots and tomatoes, it is a book about companion planting. It shows the gardener how to use plants' natural partnerships to produce bigger and better harvests, how to avoid putting together those that work against each other and even plants that promote natural pest control.

220 pages; 6 x 8 7/8" ppbk. ~~\$17.95~~

~~\$7.48+\$3 S&H = \$10.48~~



FP10

## SEED SOWING AND SAVING

Here's all the information and guidance you'll need to start saving seeds from your favorite vegetables, herbs, and flowers for planting. Dozens of charts and over 300 step-by-step illustrations show you how to determine when seeds are ready to harvest and how to collect and store them.

218 pages; 8 1/2 x 11" ppbk. ~~\$22.95~~

~~\$9.98+\$3 S&H = \$12.98~~



FP11

## SELF-SUFFICIENCY GARDENING

This 128-page book is subtitled "Financial, Physical and Emotional Security from Your Own Backyard." It's a practical guide for increasing your self sufficiency by growing vegetables, fruits, nuts, herbs, medicines, and other useful products.

128 pages; 8 1/2 x 11" ppbk. ~~\$16.95~~

~~\$6.98+\$3 S&H = \$9.98~~



FP12

## SUCCESSFUL SMALL-SCALE FARMING

This classic guide to organic small-scale farming—fully updated for the 1990s—covers a wide range of topics, including soil improvement, machinery, best cash crops, marketing, and essential skills. It shows that small-scale farms can be cleaner, smarter and more efficient than agribusiness.

134 pages; 8 1/2 x 11" ppbk. ~~\$15.95~~

~~\$6.48+\$3 S&H = \$9.48~~



FP13

## A GUIDE TO RAISING CHICKENS

This informative book is for both the beginning and experienced chicken owner and covers selecting a breed that will suit you and your environment, taking care of chicks, eggs for eating, raising broilers, feeding your flock, and troubleshooting the problems that are bound to occur.

341 pages; 6 x 9" ppbk. ~~\$21.95~~

~~\$9.48+\$3 S&H = \$12.48~~



FP14

## A GUIDE TO RAISING PIGS

This book offers small-scale farmers and 4-H or FFA youngsters clear, illustrated information about every aspect of pig raising. Included are choosing the right breeds, feeding and housing, health maintenance and disease prevention, butchering and pork processing, showing, and raising pigs as a business.

314 pages; 6 x 9" ppbk. ~~\$21.95~~

~~\$9.48+\$3 S&H = \$12.48~~



FP15

## RAISING SHEEP THE MODERN WAY

Here's the small-scale sheep raiser's bible and it is newly revised to reflect the changes occurring in the industry over the last 13 years. It includes new theories about breeding, pregnancy management and the handling of lambs, new medications and vaccines, and a whole new chapter on guard dogs.

278 pages; 6 x 9" ppbk. ~~\$15.95~~

~~\$6.48+\$3 S&H = \$9.48~~

# Backwoods Home BOOKSTORE



FP16

## CHEESEMAKING MADE EASY

How to make 60 varieties of cheese at home and includes what equipment is required as well as how to prepare a starter culture, use rennet, control temperature, and color. It has an easy-to-follow format, photos, & illustrations.

136 pages; 8 3/8 x 7 1/4" ppbk. ~~\$17.95~~

~~\$7.48~~ + \$3 S&H = \$10.48



FP17

## RAISING RABBITS THE MODERN WAY

This is the completely revised Garden Way Publishing classic on raising rabbits. It contains the most recent how-to information for successfully raising rabbits on a small to semicommercial scale including feeding, housing, medication, breeding, showing, and selling.

179 pages; 6 x 9" ppbk. \$15.95



FP18

## RAISING MILK GOATS THE MODERN WAY

This newly revised edition contains up-to-the-minute information on diseases and medication, new breeds, new barn plans, and how to maximize the quality and quantity of milk your goats produce. It also provides clear, practical instructions for breeding, kidding, feeding, milking, housing, and other basics.

200 pages; 6 x 9" ppbk. ~~\$15.95~~

~~\$6.48~~ + \$3 S&H = \$9.48



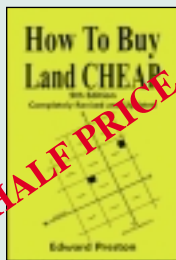
FP19

## KEEPING LIVESTOCK HEALTHY

This newly updated edition has the latest information on the technologies and diseases that livestock owners need to know including developments in vaccines, artificial insemination, drug treatments and new information on diseases such as Lyme disease, Potomac fever, & BSE.

344 pages; 6 x 9" ppbk. ~~\$22.95~~

~~\$9.95~~ + \$3 S&H = \$12.95



BU1

## HOW TO BUY LAND CHEAP

Now in its Fifth Edition, this is the bible of bargain-basement guides for cheap land and houses. It's been used to buy building lots, lakefront property, and commercial land all over the United States and Canada, including land from drug seizures and S&L closings.

130 pages; 5 1/2 x 8 1/2" ppbk. ~~\$17.95~~

~~\$7.48~~ + \$3 S&H = \$10.48



BU2

## HOW TO BUILD YOUR OWN LOG HOME FOR LESS THAN \$15,000

The author built a 4300-square-foot log home for a fraction of the cost of conventional construction. This book covers site selection, planning, tools, techniques, the foundation, raising the walls, roofing, wiring, plumbing, stairs, windows, doors, and much more.

218 pages; 8 1/2 x 11" ppbk. ~~\$22.95~~

~~\$9.98~~ + \$3 S&H = \$12.98



BU3

## BE YOUR OWN HOUSE CONTRACTOR

Details the steps that go into building a house, from selecting land and getting it financed to developing plans and schedules, selecting subcontractors, negotiating contracts, and buying materials and supplies. The author is a construction loan consultant, former home builder, and the founder of two schools of home building.

138 pages; 6 x 9" ppbk. ~~\$17.95~~

~~\$7.48~~ + \$3 S&H = \$10.48



BU4

## BUILDING SMALL BARNs, SHEDs & SHELTERS

Extend your working, living, and storage areas with these basic, easy-to-follow construction methods for multi-purpose barns, sheds, garages, root cellars, smokehouses, and much more. Everything from the tools and materials you need to finishing details are included.

237 pages; 8 1/2 x 11" ppbk. ~~\$19.95~~

~~\$8.48~~ + \$3 S&H = \$11.48



BU5

## THE HOME WATER SUPPLY

Concrete and money-saving answers to the questions of how to locate, move, and purify water. This book includes instructions for constructing ponds and how to hook up the plumbing in your home. Reading this you'll know when to try something yourself and when to call a plumber or other expert.

236 pages; 8 1/2 x 11" ppbk. ~~\$21.95~~

~~\$9.48~~ + \$3 S&H = \$12.48



BU6

## NEW COMPACT HOUSE DESIGNS

Here are the 27 best designs from a competition for single-family houses. Each house has a minimum of two bedrooms but none is more than 1250 square feet. There are drawings, plans, and judges' comments along with addresses of the architects and designers for those interested in scale plans or more information.

188 pages; 8 1/2 x 11" ppbk. ~~\$22.95~~

~~\$9.95~~ + \$3 S&H = \$12.95



BU7

## WIRING SIMPLIFIED

This is the 39th edition of Wiring Simplified, and it's based on the 1999 National Electrical Code. The book is organized into four parts: Getting started—the basics; Wires, circuits, and grounding; Installing service equipment and wiring; and Special wiring situations and projects. New topics include emergency back-up generators and low-voltage wiring.

226 pages; 5 1/2 x 8 1/2" ppbk. ~~\$12.95~~

~~\$4.98~~ + \$3 S&H = \$7.98



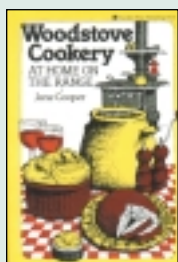
CR1

## COOKIN' WITH HOME STORAGE

Vicki Tate and Peggy Layton reunite in this newly released version of the best book there is on cooking from home stored foods. These Mormon women have years of experience and expertise behind them, and in this excellent book they will show you how to incorporate your stored foods into your everyday life.

302 pages; 5 1/2 x 8 1/2" ppbk. ~~\$19.95~~

~~\$8.48~~ + \$3 S&H = \$11.48



CR2

## WOODSTOVE COOKERY

This book will tell you how to buy a wood stove—new or used, how to set it up, fuel it, clean it, and keep it in peak operating condition. But most importantly it will show you how to cook on it. There are dozens of recipes including breads, stews, roasts, soups, desserts and more. There's even food preservation. A must for the self-reliant.

196 pages; 6 x 9" ppbk. \$15.95



CR3

## HEAVEN'S FLAME

This book provides detailed plans to build a very hot and efficient solar cooker from the barest of materials. The solar cooker can then be used to cook anything from snacks to full meals. Included is an explanation of how solar cookers work and accounts of how they are being accepted and used around the world to produce good cooked meals from sunlight.

145 pages; 5 1/2 x 8 1/2" ppbk. ~~\$18.00~~

~~\$7.50~~ + \$3 S&H = \$10.50



CR4

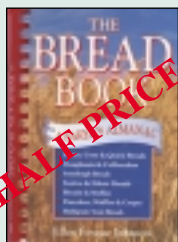
## THE MORNING HILL COOKBOOK

For years, Backwoods Home Magazine readers have enjoyed Jennifer Stein Barker's wonderful vegetarian recipes in the pages of Backwoods Home Magazine. Now here is an entire book (182 pages) of her wholesome, delicious recipes.

182 pages; 6 x 9" comb bnd. \$14.95



# Backwoods Home BOOKSTORE



## THE BREAD BOOK

This book is a month-by-month almanac that offers 140 bread recipes from around the world. It is well illustrated with line and photographs and it contains time-saving tips and advice for the beginning baker.

230 pages; 6 x 9" comb bnd.

~~\$19.95~~

CR5

\$8.48+\$3 S&H = \$11.48



## COOKIN' WITH BEANS AND RICE

This book is packed with fun-filled recipes that combine beans and rice, as well as other foods. Peggy Layton is a home economist who has written several books on food storage. With 7 children to feed, she cooks from bulk food storage on a regular basis, and this book reflects her extensive experience.

156 pages; 5 3/8 x 8 1/4" ppbk.

~~\$14.95~~

\$5.98+\$3 S&H = \$8.98

CR6



## COUNTRY BEANS

Soups, sauces, and gravies in 3 minutes! 400 heart-healthy, cholesterol-free bean and grain recipes using wholesome storage foods. Learn how to make "user friendly" beans and cheap meals in 30 minutes or less. Low fat or no-fat bean soups, dips, sauces, and gravies from bean flours in only minutes.

196 pages; 6 x 8 1/4" ppbk.

~~\$17.95~~

\$7.48+\$3 S&H = \$10.48

CR7



## 15 MINUTE STORAGE MEALS

Offers quick, healthful recipes that utilize the "fabulous 30" foods of high energy, which are rich in complex carbohydrates. These are high octane foods that will be valuable in an emergency. Illustrates the basic necessities and gives recipes for them. Contains a guide for things to store in your pantry.

133 pages; 5 1/2 x 8 1/2" ppbk.

~~\$15.95~~

\$6.48+\$3 S&H = \$9.48

CR8



## GUERRILLA CAPITALISM

Don't fork over all your hard-earned cash to the IRS! Beat the system and do business tax-free. This book shows you how to join the growing underground economy, how the barter economy works, how to run a business off the books, how to stay clear of the IRS, and how to practice free enterprise in an unfree economy.

172 pages; 5 1/2 x 8 1/2" ppbk.

~~\$17.95~~

\$17.95

TH1



## JURY NULLIFICATION

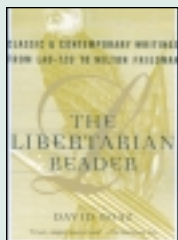
Our Founding Fathers ordained that jurors had the right to vote "not guilty" if a law is unjust or unjustly applied. This allows us to hold the government to the principles of the Constitution and prevent oppression. But American courts now systematically deny us this right. Read this book and realize your real power as a juror.

311 pages; 6 x 9" ppbk.

~~\$25.50~~

\$25.50

TH2



## THE LIBERTARIAN READER

A comprehensive anthology of libertarian thought with readings from the Bible, our Founding Fathers, philosophers, economists, and others explaining why the individual and personal freedom are more important than collectivism and the state. Here is the sensible alternative to the Democrat/Republican monopoly.

458 pages; 6" x 9" ppbk.

~~\$20.95~~

\$20.95

TH3



## A NEW DEAL FOR SOCIAL SECURITY

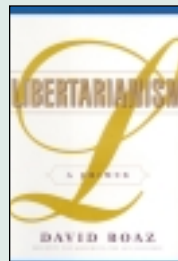
For more than 60 years, Social Security has been the most important source of income for senior citizens. Now facing severe crisis, this book examines the history of Social Security and argues that unless it is restructured and privatized, the baby boom generation, after contributing for a lifetime, will be left out the cold.

262 pages; 6 X 9" ppbk.

~~\$13.95~~

\$13.95

TH4



## LIBERTARIANISM: A PRIMER

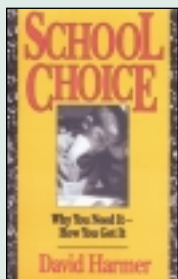
This book traces the history of libertarian thought and provides a concise yet thorough treatment of the subject. The writer discusses why libertarianism is morally just, efficient, and practical, and how it would affect public policy in America by leaving decisions in the hands of the individual, creating a freer and more efficient society.

314 pages; 6 x 8 1/2" hdbk.

~~\$26.00~~

\$26.00

TH5



## SCHOOL CHOICE

This book explains why public schools no longer work, why the NEA resists the reform that would save education, and how and why it mounted one of the costliest political campaigns in American history to stop reform in California. Included is the compelling argument that shows why free choice in education is the one reform that will work.

203 pages; 5 7/8 x 9" ppbk.

~~\$15.95~~

\$15.95

TH6



## FORFEITING OUR PROPERTY RIGHTS

The government can take your home, your car, and your money without warning and never charge you with a crime—and the burden of recovery is on you! This book examines the abuse inherent in civil forfeiture, the law that lets government take property that is merely suspected of having "facilitated" crime.

100 pages; 6 x 9 1/2" hdbk.

~~\$19.95~~

\$19.95

TH7



## CLIMATE OF FEAR

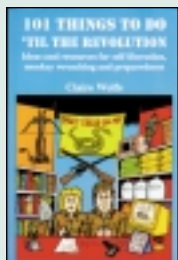
Many climatologists believe that industrial emissions of carbon dioxide are leading to an increase in global temperatures. Economist Thomas Gale Moore asks, "So what?" His book argues that, based on both historical and economic analyses, a warmer climate would be, on balance, beneficial to both mankind and the environment.

177 pages; 5 7/8 x 8 7/8" ppbk.

~~\$12.95~~

\$12.95

TH8



## 101 THINGS TO DO 'TIL THE REVOLUTION

For the concerned citizen who wishes to keep a low profile, protect his or her rights, and survive in the "interesting times" which are sure to come, this book is essential reading. Wolfe lists the supplies you should be laying in and activities you should be engaging in before stuff starts spraying off the fan. She also lists some interesting web sites you should look into.

200 pages; 5 3/8 x 8 3/8" ppbk.

~~\$18.95~~

\$18.95

MS1



## IN THE GRAVEST EXTREME

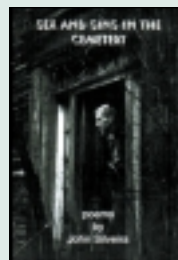
This is everything you should know before you consider acquiring a gun for self defense. Covers technical, tactical, and legal issues. Author Massad Ayoob, a police officer of many years' experience, is a nationally respected authority on firearms.

132 pages; 5 3/8 x 8 1/4" ppbk.

~~\$12.95~~

\$12.95

MS2



## SEX AND SINS IN THE CEMETERY

This book contains over 70 of John Silva's poems about love, work, and death...poems so stark and accessible, you will discover that he is revealing things about you as well as himself. Warning: Some of the poems are explicit and couldn't be published in BHM.

104 pages; 5 3/8 x 8 3/8" ppbk.

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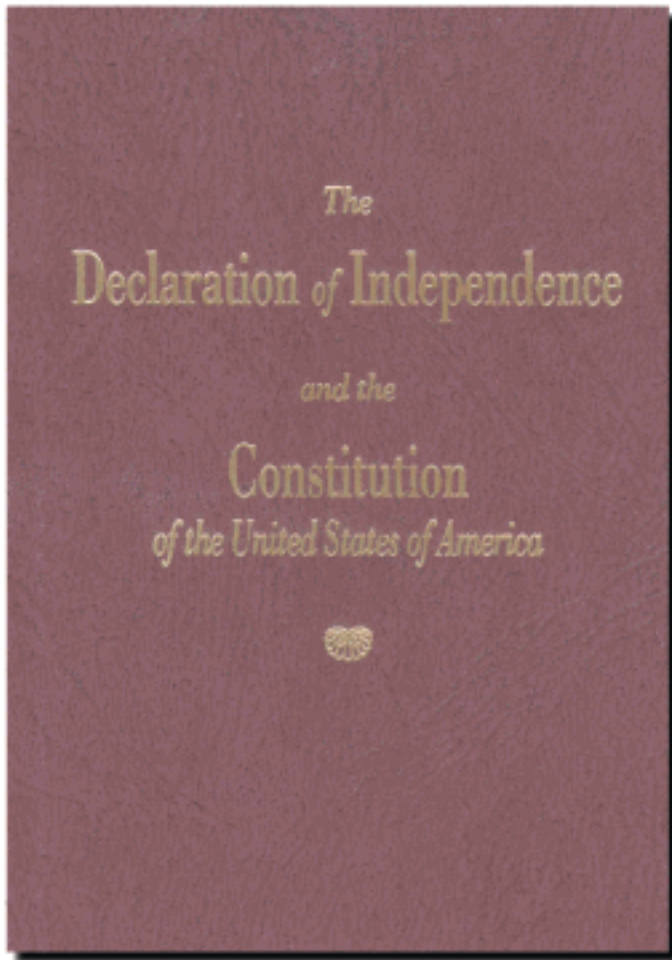
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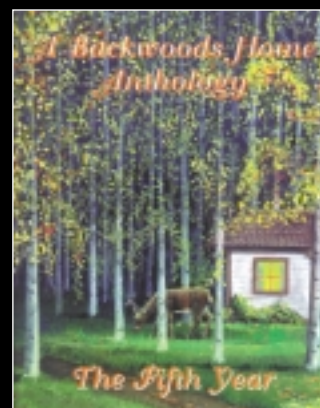
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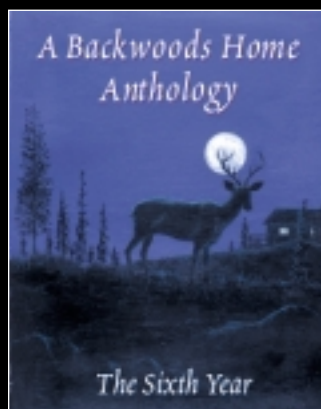
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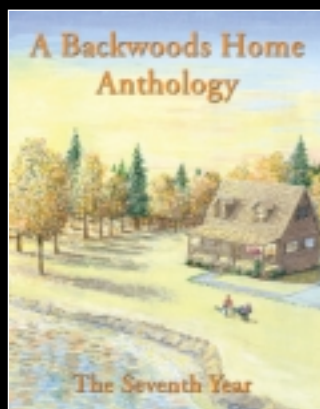
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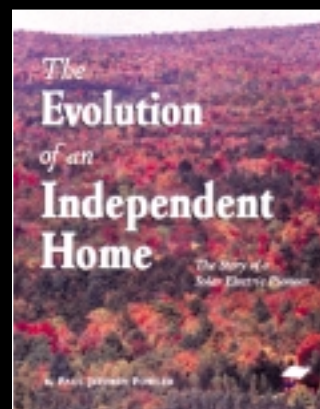
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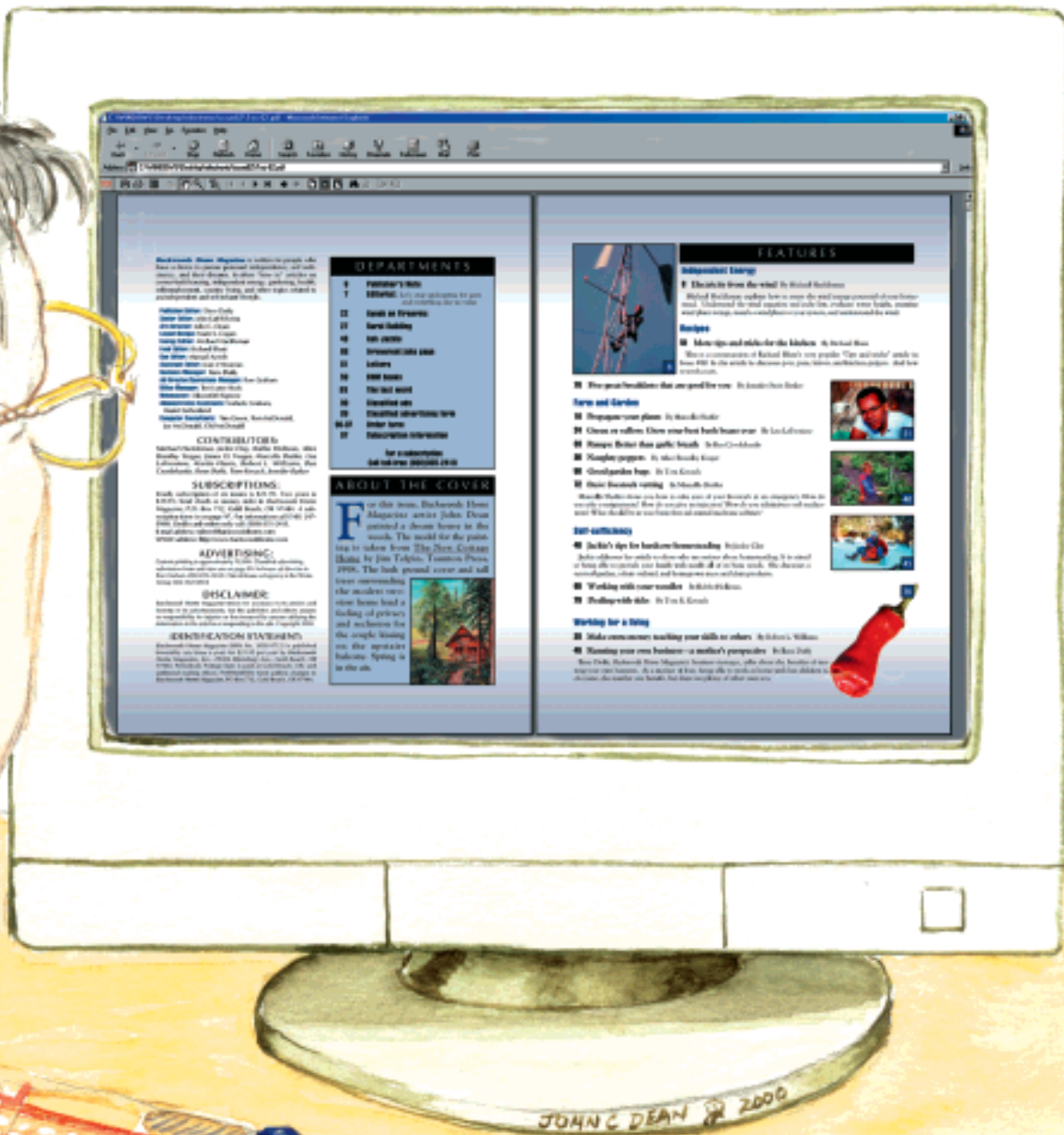
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# END of THE WORLD SPECIAL

This issue's phony doomsayer prediction:

*Global Warming:* The release of greenhouse gasses by civilization is going to warm up the atmosphere, turn the fertile areas of the world into deserts, and melt the polar ice caps until sea levels rise and flood coastal cities.

Backwoods Home Magazine's explanation:

From historical records we know that in Roman times the world was warmer than it is today, and the paleontological record shows that 13,000 years ago, when the last Ice Age ended, the planet was warmer than it has been at any time in recorded history.

In fact, the onset of another Ice Age is far more likely than Global Warming. For most of the last million years, earth has gone through a series of glaciations (Ice Ages), each one lasting about 100,000 years. These Ice Ages have been interrupted by brief periods of warming, called interglacials, each one lasting about 10,000 years but some lasting as long as 20,000 years. The period of warming we are now in is 13,000 years old, and if it is similar to the last interglacial, which occurred 120,000 years ago and lasted only 10,000 years, it is near its end. You must go back four glaciations—about 400,000 years—to find a warming period that lasted as much as 20,000 years. During those former glaciations, ice more than a kilometer high covered most of North America and Europe, and sea levels fell by about 100 feet.

Our special sale offer to celebrate the truth:

To celebrate this issue's *End of the World Special*, we're offering 38 books at half price (until they are sold out). The books are shown on pages 92-95. You can order them with the form on page 74.

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